

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.



Ex approval	Mechanical drive	Safety-Lock™	High rotational speed	High protection level	High shaft load capacity	Shock / vibration resistant	Magnetic field proof	Reverse polarity protection	Optical sensor	Seawater durable

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 EU 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)
<p>a Flange 1 = clamping / synchronous flange, ø 70 mm [2.76"]</p> <p>b Shaft (ø x 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</p> <p>c Interface / supply voltage 3 = PROFIBUS DP V0 / 10 ... 30 V DC</p>	<p>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']</p> <p>e Fieldbus profile 31 = PROFIBUS DP V0 encoder profile class 2</p> <p>f Cable length in dm 1) 0050 = 5 m [16.40'] 0100 = 10 m [32.81'] 0150 = 15 m [49.21']</p>	<p><i>Optional on request</i> - special cable length - seawater resistant (stainless steel V4A)</p>	

1) Not applicable with connection types 1 and 2.

Absolute encoders – multiturn

Standard, ATEX/IECEX – zone 1/21 mechanical multiturn, optical	Sendix 7068 / 7088 (shaft / hollow shaft)	PROFIBUS DP
---	--	--------------------

Order code	8.7088	.XX3X.3111.XXXX
Hollow shaft	Type	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']
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']
		<i>Optional on request</i> - special cable length - seawater resistant (stainless steel V4A)

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

Technical data

Explosion protection	
ATEX	
EU type-examination certificate	IBExU 15 ATEX 1091 X
Category (gas)	
Sendix 7068 – 6000 rpm	Ex II 2G Ex db IIC T4 Gb
Sendix 7068 – 2000 rpm	Ex II 2G Ex db IIC T5 Gb
Sendix 7088 – 3000 rpm	Ex II 2G Ex db IIC T4 Gb
Sendix 7088 – 2000 rpm	Ex II 2G Ex db IIC 120°C (T4) Gb
Category (dust)	
Sendix 7068 – 6000 rpm	Ex II 2D Ex tb IIIC T135°C Db
Sendix 7068 – 2000 rpm	Ex II 2D Ex tb IIIC T100°C Db
Sendix 7088 – 3000 rpm	Ex II 2D Ex tb IIIC T135°C Db
Sendix 7088 – 2000 rpm	Ex II 2D Ex tb IIIC T120°C Db
Relevant standards	EN 60079-0:2018
ATEX guideline 2014/34/EU	EN 60079-1:2014
	EN 60079-31:2014
IECEX	
Certificate of Conformity (CoC)	IECEX IBE 15.0020 X
Category (gas)	
Sendix 7068 – 6000 rpm	Ex db IIC T4 Gb
Sendix 7068 – 2000 rpm	Ex db IIC T5 Gb
Sendix 7088 – 3000 rpm	Ex db IIC T4 Gb
Sendix 7088 – 2000 rpm	Ex db IIC 120°C (T4) Gb
Category (dust)	
Sendix 7068 – 6000 rpm	Ex tb IIIC T135°C Db
Sendix 7068 – 2000 rpm	Ex tb IIIC T100°C Db
Sendix 7088 – 3000 rpm	Ex tb IIIC T135°C Db
Sendix 7088 – 2000 rpm	Ex tb IIIC T120°C Db
Relevant standards	IEC 60079-0:2017
	IEC 60079-1:2014
	IEC 60079-31:2013

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

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 EU 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

EMC	
Relevant standards	EN 55011 class B EN (IEC) 61326-1

1) Not applicable with connection types 1 and 2.

Absolute encoders – multiturn

Standard, ATEX/IECEX – zone 1/21 mechanical multiturn, optical	Sendix 7068 / 7088 (shaft / hollow shaft)	PROFIBUS DP
---	--	--------------------

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

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.

Approvals	
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
ATEX Directive	2014/34/EU

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

Absolute encoders – multiturn

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

Sendix 7068 / 7088 (shaft / hollow shaft)

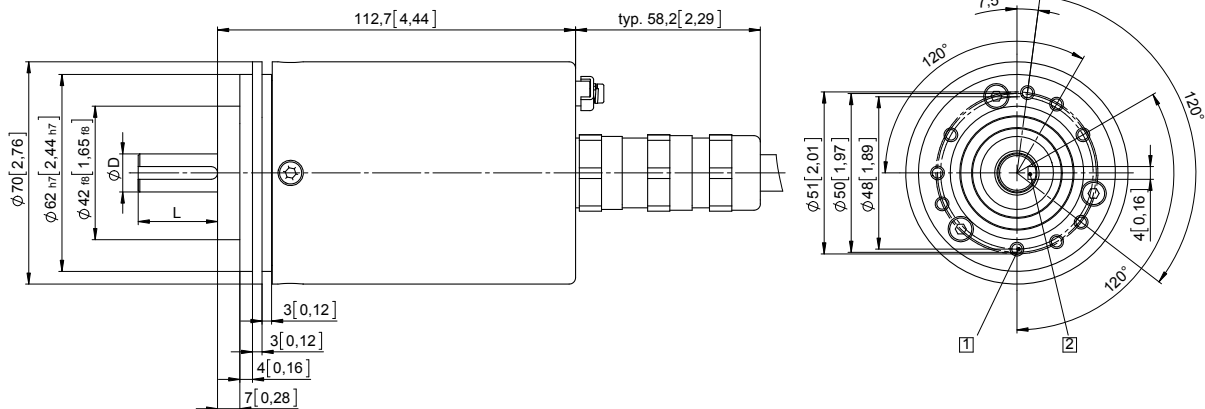
PROFIBUS DP

Dimensions shaft version

Dimensions in mm [inch]

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

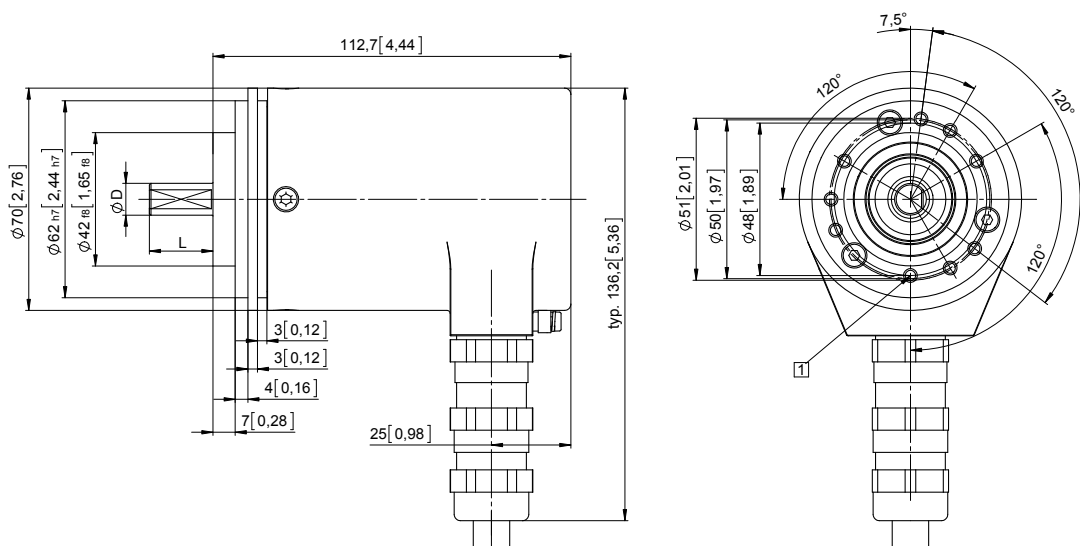
- 1 9 x M4, 10 [0.39] deep
- 2 Keyway for DIN 6885-A-4x4x25 key



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]

Absolute encoders – multiturn

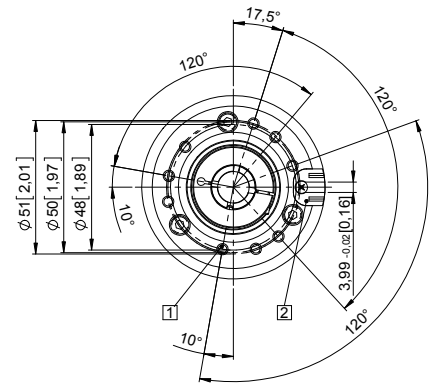
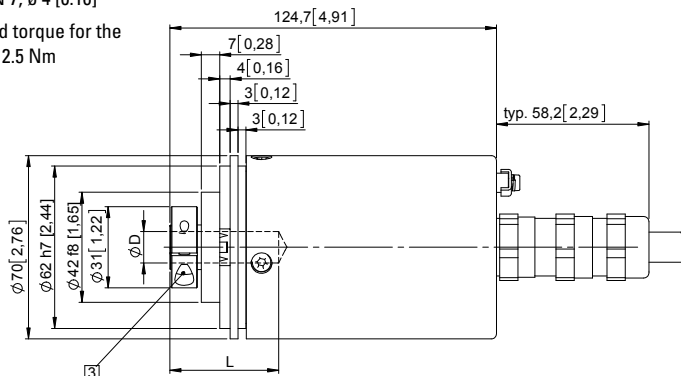
Standard, ATEX/IECEx – zone 1/21 mechanical multiturn, optical	Sendix 7068 / 7088 (shaft / hollow shaft)	PROFIBUS DP
---	--	--------------------

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, ϕ 4 [0.16]
- 3 Recommended torque for the clamping ring 2.5 Nm

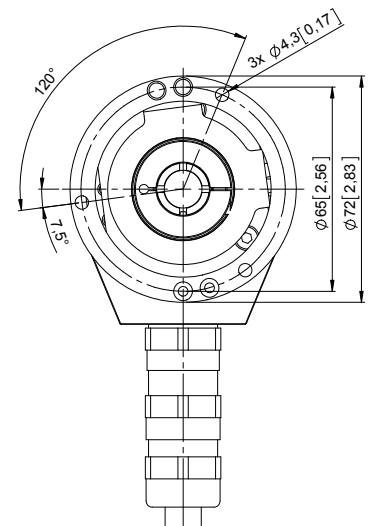
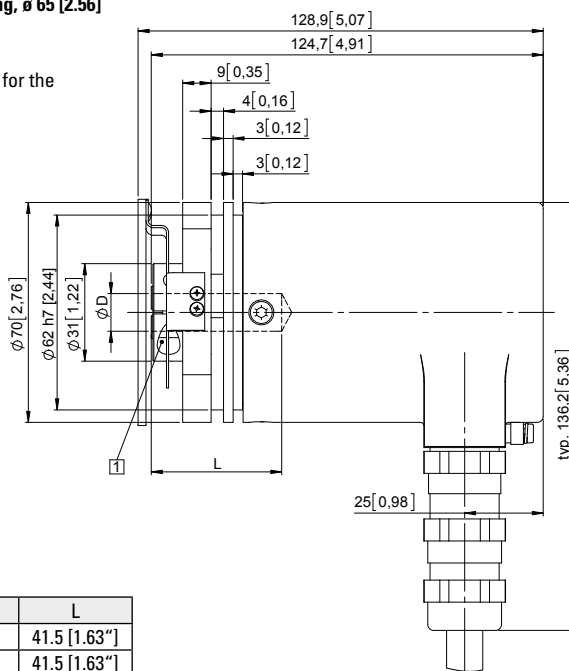


D	Fit	L
12 [0.47]	H7	41.5 [1.63"]
14 [0.55]	H7	41.5 [1.63"]

L = insertion depth max. blind hollow shaft

Flange with stator coupling, ϕ 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