

Absolute encoders – multiturn

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

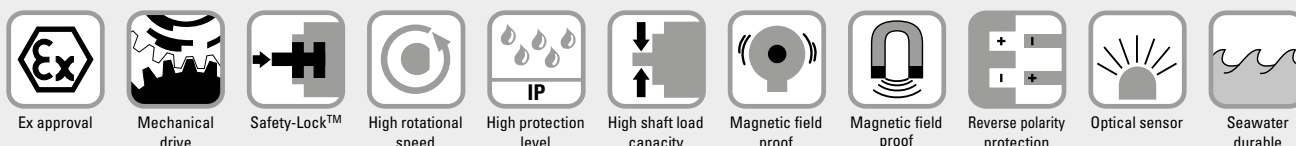
Sendix 7063 / 7083 (shaft / hollow shaft)

SSI/BiSS



The Sendix 7063 / 7083 absolute multiturn encoders offer Ex protection in a compact 70 mm seawater durable aluminum housing, with an SSI or BiSS interface and optical sensor technology.

These shock and vibration-resistant encoders operate flexibly with a resolution of up to 29 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 EU type examination certificate.
- IECEX with certificate of conformity (CoC).

Order code 8.7063 . 1 X 2 X . X X 2 1 . XXXX
Shaft version Type a b c d e f g h i 1)

a Flange
1 = clamping / synchronous flange, ø 70 mm [2.76"]

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

c Interface / supply voltage
2 = SSI, BiSS / 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 Code
B = SSI, binary
C = BiSS, binary
G = SSI, gray

f Resolution 2)
A = 10 bit ST + 12 bit MT
1 = 11 bit ST + 12 bit MT
2 = 12 bit ST + 12 bit MT
3 = 13 bit ST + 12 bit MT
4 = 14 bit ST + 12 bit MT
7 = 17 bit ST + 12 bit MT

g Inputs / outputs 2)
2 = SET, DIR input
additional status output

h Options
1 = no option

i 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
- other resolutions
- seawater resistant (stainless steel V4A)

1) Not applicable with connection types 1 and 2.
2) Resolution, preset value and counting direction factory-programmable.

Absolute encoders – multiturn

Standard, ATEX/IECEX – zone 1/21 mechanical multiturn, optical	Sendix 7063 / 7083 (shaft / hollow shaft)	SSI / BiSS
---	--	-------------------

Order code Hollow shaft	8.7083 Type	.XX2X.XX21.XXXX a b c d e f g h i ¹⁾	
a Flange 1 = with spring element, short 5 = with stator coupling, ø 65 mm [2.56"]	e Code B = SSI, binary C = BiSS, binary G = SSI, gray	i Cable length in dm ¹⁾ 0050 = 5 m [16.40'] 0100 = 10 m [32.81'] 0150 = 15 m [49.21']	
b Blind hollow shaft (insertion depth max. 41.5 mm [1.63"]) 1 = ø 12 mm [0.47"] 2 = ø 14 mm [0.55"]	f Resolution ²⁾ A = 10 bit ST + 12 bit MT 1 = 11 bit ST + 12 bit MT 2 = 12 bit ST + 12 bit MT 3 = 13 bit ST + 12 bit MT 4 = 14 bit ST + 12 bit MT 7 = 17 bit ST + 12 bit MT	Optional on request - special cable length - other resolutions - seawater resistant (stainless steel V4A)	
c Interface / supply voltage 2 = SSI, BiSS / 10 ... 30 V DC	g Inputs / outputs ²⁾ 2 = SET, DIR input additional status output		
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']	h Options 1 = no option		

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		Electrical characteristics	
ATEX		Supply voltage	10 ... 30 V DC
EU type-examination certificate	IBExU 15 ATEX 1091 X	Current consumption (no load)	max. 45 mA
Category (gas)	Sendix 7063 – 6000 rpm II 2G Ex db IIC T4 Gb Sendix 7063 – 2000 rpm II 2G Ex db IIC T5 Gb Sendix 7083 – 3000 rpm II 2G Ex db IIC T4 Gb Sendix 7083 – 2000 rpm II 2G Ex db IIC 120°C (T4) Gb	Reverse polarity protection for supply voltage	yes
Category (dust)	Sendix 7063 – 6000 rpm II 2D Ex tb IIIC T135°C Db Sendix 7063 – 2000 rpm II 2D Ex tb IIIC T100°C Db Sendix 7083 – 3000 rpm II 2D Ex tb IIIC T135°C Db Sendix 7083 – 2000 rpm II 2D Ex tb IIIC T120°C Db	Short-circuit proof outputs	yes ³⁾
Relevant standards	EN 60079-0:2018 ATEX guideline 2014/34/EU EN 60079-1:2014 EN 60079-31:2014	EMC	
IECEX		Relevant standards	EN 55011 class B EN (IEC) 61326-1
Certificate of Conformity (CoC)	IECEX IBE 15.0020 X		
Category (gas)	Sendix 7063 – 6000 rpm Ex db IIC T4 Gb Sendix 7063 – 2000 rpm Ex db IIC T5 Gb Sendix 7083 – 3000 rpm Ex db IIC T4 Gb Sendix 7083 – 2000 rpm Ex db IIC 120°C (T4) Gb		
Category (dust)	Sendix 7063 – 6000 rpm Ex tb IIIC T135°C Db Sendix 7063 – 2000 rpm Ex tb IIIC T100°C Db Sendix 7083 – 3000 rpm Ex tb IIIC T135°C Db Sendix 7083 – 2000 rpm Ex tb IIIC T120°C Db		
Relevant standards	IEC 60079-0:2017 IEC 60079-1:2014 IEC 60079-31:2013		

1) Not applicable with connection types 1 and 2.
2) Resolution, preset value and counting direction factory-programmable.
3) Short-circuit with 0 V or output, only one channel at a time, supply voltage correctly applied.

Absolute encoders – multiturn

Standard, ATEX/IECEx – zone 1/21 mechanical multiturn, optical			Sendix 7063 / 7083 (shaft / hollow shaft)			SSI/BiSS		
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] p lease 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								
acc. to EN/IEC 60068-2-27		2500 m/s ² , 6 ms						
Vibration resistance								
acc. to EN/IEC 60068-2-6		100 m/s ² , 55 ... 2000 Hz						
SSI interface								
Output driver		RS422 transceiver type						
Permissible load / channel			max. +/- 20 mA					
Signal level		HIGH	typ 3.8 V					
		LOW at I _{Load} = 20 mA	typ 1.3 V					
Resolution singleturn			10 ... 14 bit and 17 bit					
Number of revolutions (multiturn)			4096 (12 bit)					
Code			binary or gray					
SSI clock rate			50 kHz ... 2 MHz					
Data refresh rate		ST resolution ≤ 14 bit	≤ 1 µs					
		ST resolution ≥ 15 bit	4 µs					
Monoflop time			≤ 15 µs ²⁾					
Note: if clock starts cycling within monoflop time a second data transfer starts with the same data. If clock starts cycling after monoflop time, the data transfer starts with updated values. The update rate depends on clock speed, data length and monoflop time.								
BiSS interface								
Output driver		RS422 transceiver type						
Permissible load / channel			max. +/- 20 mA					
Signal level		HIGH	typ 3.8 V					
		LOW at I _{Load} = 20 mA	typ 1.3 V					
Resolution singleturn			10 ... 14 bit and 17 bit					
Number of revolutions (multiturn)			4096 (12 bit)					
Code			binary					
Clock rate			up to 10 MHz					
Max. update rate			< 10 µs, depends on the clock rate and the data length					
Data refresh rate		ST resolution ≤ 14 bit	≤ 1 µs					
		ST resolution 17 bit	2.4 µs					
Note: – bidirectional, factory programmable parameters are: resolution, code, direction, alarms and warnings – CRC data verification								
Status output								
Output driver		open collector, internal pull-up resistor 22 kOhm						
Permissible load			max. 20 mA					
Signal level		HIGH	+V					
		LOW	< 1 V					
Active at			LOW					
The status output serves to display various alarm or error messages. The status output is HIGH (open collector with internal pull-up 22 kOhm) in normal operation.								
SET input								
Input		HIGH active						
Input type			comparator					
Signal level (+V = Supply voltage)		HIGH	min.	60 % of +V				
		LOW	max.	+V 25 % of +V				
Input current			< 0.5 mA					
Min. pulse duration (SET)			10 ms					
Timeout after SET signal			14 ms					
The encoder can be set to zero at any position by means of a HIGH signal on the SET input. Other preset values can be factory-programmed. The SET input has a signal delay time of approximately 1 ms. Once the SET function has been triggered, the encoder requires an internal processing time of approximately 15 ms before the new position data can be read. If this input is not used, it should be connected to 0 V (Encoder ground GND) in order to avoid interferences.								
DIR input								
Direction input: A HIGH signal switches the direction of rotation from the default cw to ccw. This inverted function can also be factory-programmed. If DIR is reversed when the device is already switched on, this will be interpreted as an error. The status output switches to LOW. If this input is not used, it should be connected to 0 V (Encoder ground GND) in order to avoid interferences.								
Response time (DIR input)			1 ms					
Power-ON								
After Power-ON the device requires a time of approx. 150 ms before valid data can be read. Hot plugging of the encoder should be avoided.								
Approvals								
CE compliant in accordance with								
				EMC Directive	2014/30/EU			
				RoHS Directive	2011/65/EU			
				ATEX Directive	2014/34/EU			

Absolute encoders – multiturn

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

Sendix 7063 / 7083 (shaft / hollow shaft)

SSI/BiSS

Terminal assignment

Interface	Type of connection	Features	Cable (isolate unused cores individually before initial start-up)											
2	1, 2, A, B	SET, DIR	Signal:	0 V	+V	C+	C-	D+	D-	SET	DIR	ERR\	⊥	⊥
			Core marking:	1	2	3	4	5	6	7	8	9	YE/GN	shield

+V: Supply voltage encoder +V DC

0 V: Supply voltage encoder ground GND (0 V)

C+, C-: Clock signal

D+, D-: Data signal

SET: Set input

DIR: Direction input

ERR\: Status output

⊥: Protective earth

Dimensions shaft version

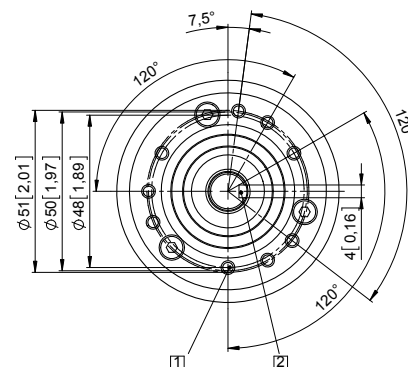
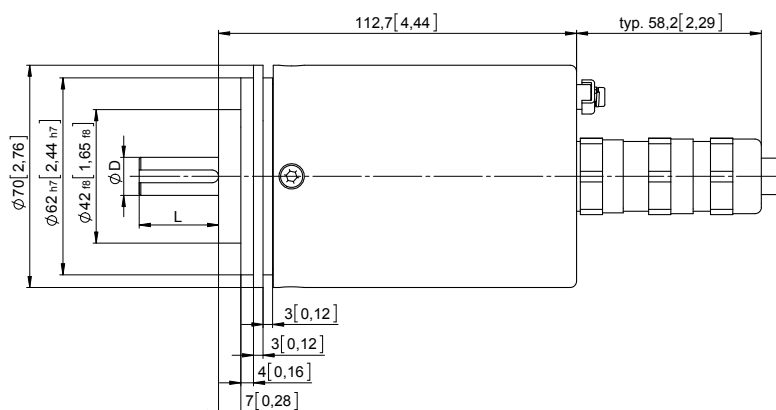
Dimensions in mm [inch]

Clamping / synchronous flange, ø 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

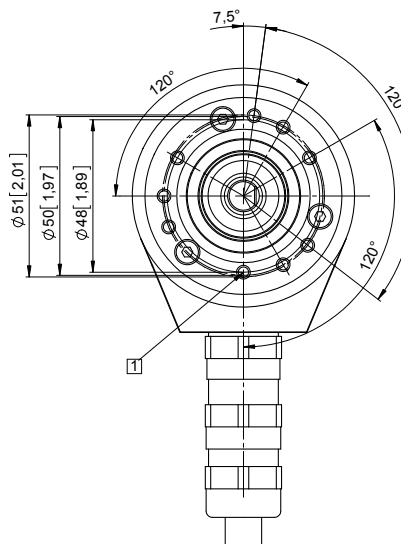
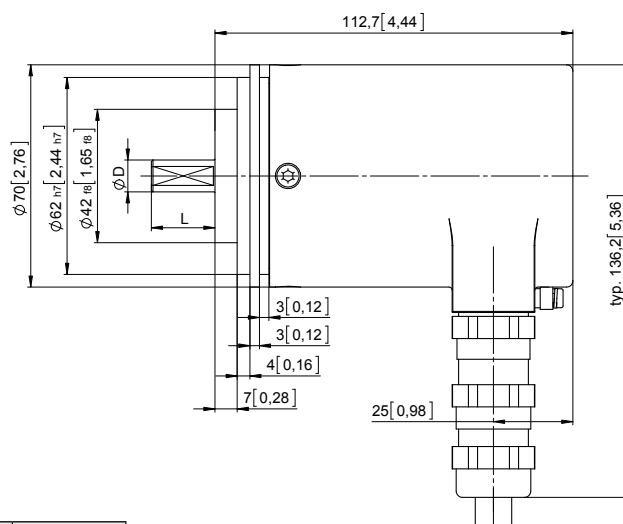


D	Fit	L
12 [0.47]	g6	25 [0.98]

Clamping / synchronous flange, ø 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 7063 / 7083 (shaft / hollow shaft)

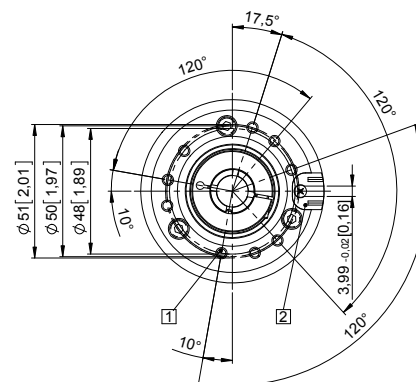
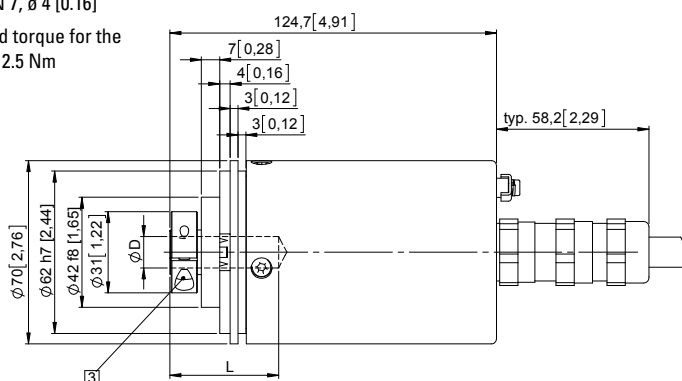
SSI/BiSS

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

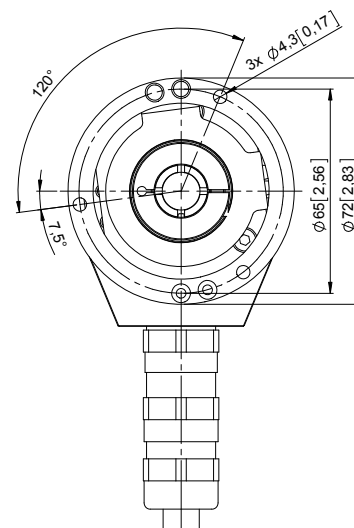
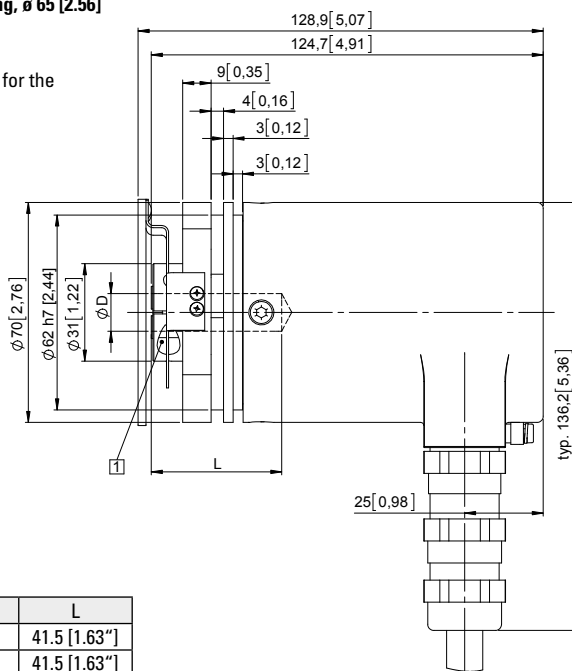


D	Fit	L
12 [0.47]	H7	41.5 [1.63"]
14 [0.55]	H7	41.5 [1.63"]

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