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.

Ex approval | Mechanical drive | Safety-Lock™ | High rotational speed | High protection level | High shaft load capacity | Magnetic field proof | 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 EC type examination certificate.
- IECEx with certificate of conformity (CoC).

Order code Shaft version

8.7063	.	1	X	2	X	.	X	X	2	1	.	XXXX
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.

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

Order code Hollow shaft

8.7083	.	X	X	2	X	.	X	X	2	1	.	XXXX
Type		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"]

b *Blind hollow shaft*
(insertion depth max. 41.5 mm [1.63"])
1 = ø 12 mm [0.47"]
2 = ø 14 mm [0.55"]

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
- IP65 version for T6
- 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 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 7063

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 7083

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

Electrical characteristics

Supply voltage	10 ... 30 V DC
Current consumption (no load)	max. 45 mA
Reverse polarity protection for supply voltage	yes
Short-circuit proof outputs	yes [3]

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

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.

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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 EC 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		RS485 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		RS485 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
		max. +V
	LOW	max. 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 (for Ex 2/22 variants)

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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	Stat	⏚	⏚
			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

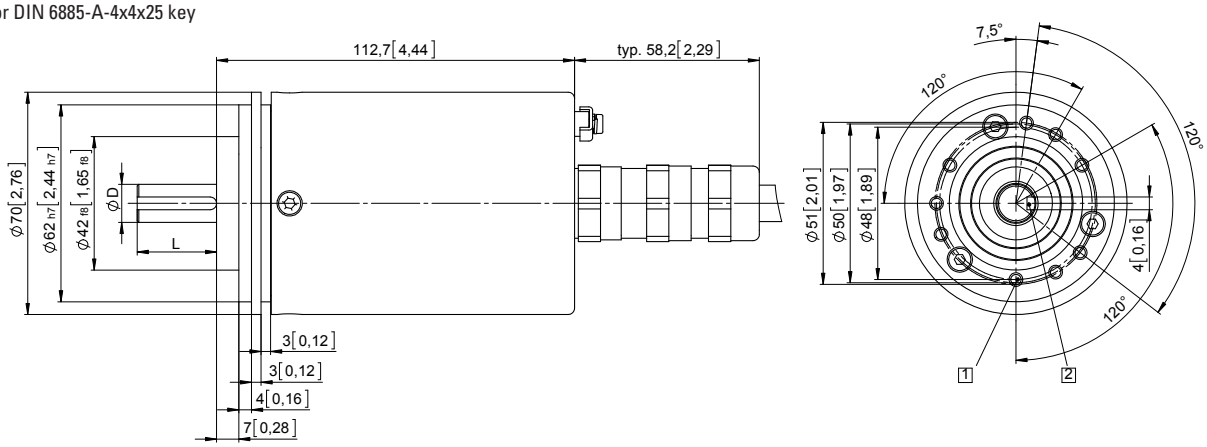
SET: Set input
DIR: Direction input
Stat: Status output
⏚: Protective earth

Dimensions shaft version

Dimensions in mm [inch]

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

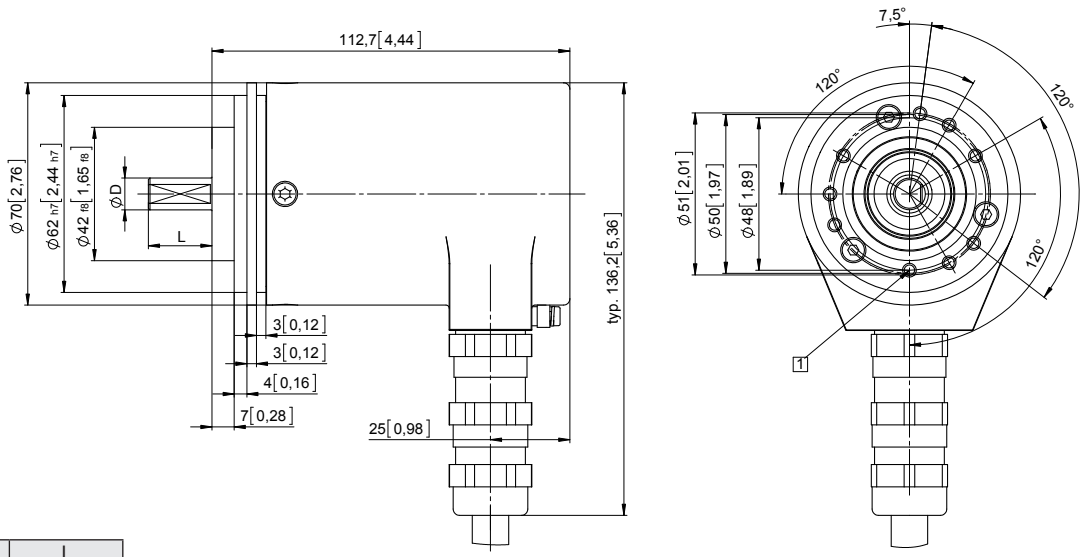
1 9 x M4, 10 [0.39] deep
2 Keyway for DIN 6885-A-4x4x25 key



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]

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

Dimensions hollow shaft version

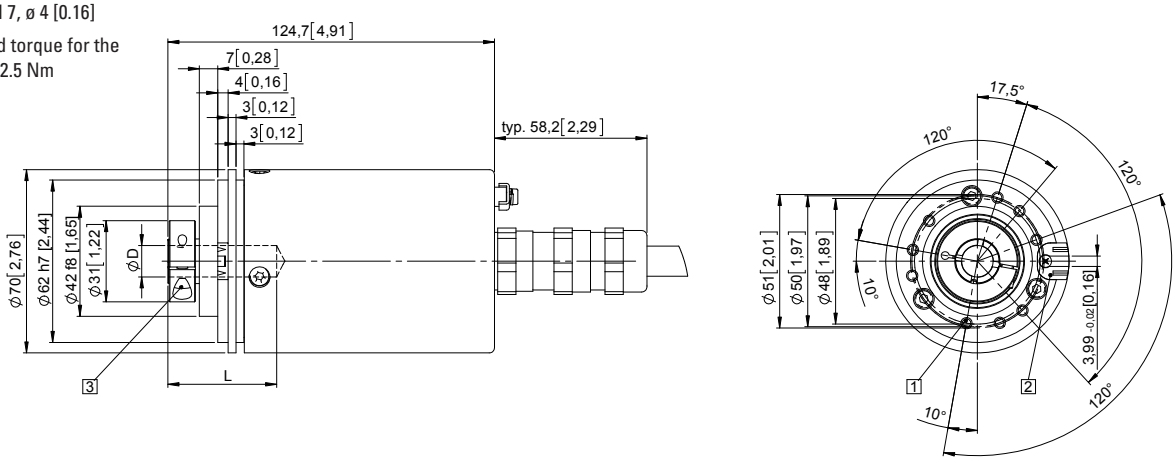
Dimensions in mm [inch]

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, ø 4 [0.16]

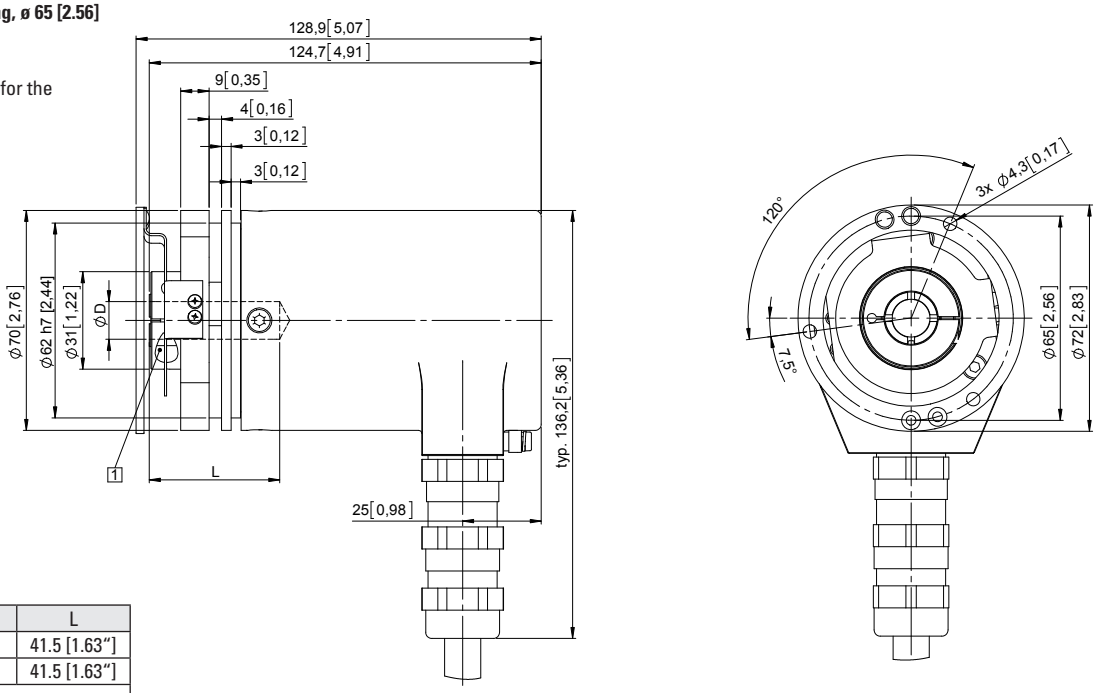
3 Recommended torque for the clamping ring 2.5 Nm



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, ø 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		

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