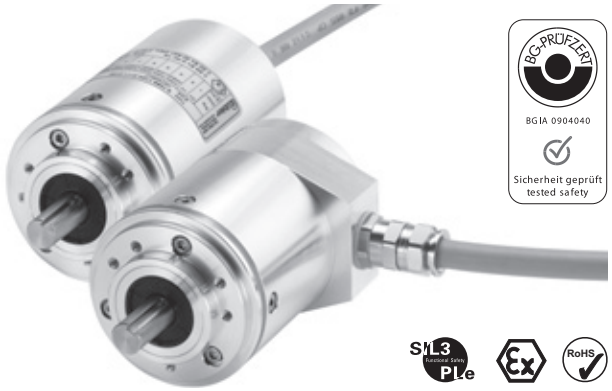
ATEX, optical | **Sendix 7063 SIL (Shaft)** | **SSI / BiSS-C + SinCos**



Ex protection and Functional Safety in one device.

The absolute multiturn encoders Sendix 7063 SIL are perfectly suited for use in safety-related applications up to SIL3 according to DIN EN ISO 61800-5-2 or PLe to DIN EN ISO 13849.

In addition, these devices ensure Ex protection in a compact 70 mm housing out of seawater-resistant aluminium.

Ex approval | Safety-Lock™ | High rotational speedv | High IP value | High shaft load capacity | Shock / vibration resistant | Magnetic field proof | Short-circuit proof | Reverse polarity protection | Optical sensor | Seawater-resistant

Functional Safety

- Certified by the German Institute for Occupational Safety (IFA)
- Suitable for SIL3 applications acc. to DIN EN ISO 61800-5-2
- Suitable for PLe applications acc. to DIN EN ISO 13849
- SSI or BiSS-C interface with incremental SinCos tracks

ATEX compliant

- "Flameproof-enclosure" version: approved for zone 1, 2 and 21, 22
- Zone 1, 2 and 21, 22:
  Ex II 2G Ex d IIC T6 and Ex II 2D Ex tD A21 IP6X T85°C

Order code Shaft version

8.7063SIL	.	1	X	4	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, IP67

b *Shaft (ø x L)*
1 = 12 x 25 mm, with keyway for 4 x 4 mm key
2 = 10 x 20 mm, with flat

c *Interface / Power supply*
4 = SSI / BiSS-C + 2048 ppr SinCos track / 10 ... 30 V DC

d *Type of connection*
1 = axial cable (2 m PUR)
2 = radial cable (2 m PUR)
A = axial cable (length > 2 m)
B = radial cable (length > 2 m)
(preferred lengths, see **i**, e.g.: 0100 = 10 m)

e *Code*
B = SSI, Binary
C = BiSS-C, Binary
G = SSI, Gray

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

g *Inputs / Outputs* 2)
2 = SET, DIR input

h *Options*
1 = no option

i *Cable length in dm* 1)
0050 = 5 m
0100 = 10 m
0150 = 15 m

optional on request
- special cable length

Further accessories can be found in the accessories section or in the accessories area of our website at: www.kuebler.com/accessories.
Additional connectors can be found in the connection technology section or in the connection technology area of our website at: www.kuebler.com/connection_technology.
You will find an overview of our systems and components for Functional Safety under www.kuebler.com/safety

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

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Explosion protection

EC type-examination certificate	PTB09 ATEX 1106 X
Category (gas)	Ex II 2G Ex d IIC T6
Category (dust)	Ex II 2D Ex tD A21 IP6X T85°C
Directive 94/9 EC	EN 60079-0; DIN EN 60079-1 EN 61241-0; DIN EN 61241-1

Mechanical characteristics

Max. speed		continuous 6 000 min^{-1}
Starting torque		< 0.05 Nm
Rotor moment of inertia		4.0 x 10^{-6} kgm^2
Load capacity of shaft	radial axial	80 N 40 N
Weight		approx. 0.6 kg
Protection acc. to EN 60529		IP67
Working temperature range		-40°C ... +60°C
Materials	shaft flange / housing cable	stainless steel seawater-resistant Al, type AlSiMgMn (EN AW-6082) or stainless steel PUR
Shock resistance acc. EN 60068-2-27		2500 m/s^2, 6 ms
Vibration resistance acc. EN 60068-2-6		100 m/s^2, 55 ... 2000 Hz

General electrical characteristics

Power supply	10 ... 30 V DC
Current consumption (w/o output load)	max. 50 mA
Reverse polarity protection for power supply (U_B)	yes
CE compliant acc. to	EN 61000-6-2, EN 61000-6-4 and EN 61000-6-3
RoHS compliant acc. to	EU guideline 2002/95/EC

SSI interface

Output driver		RS485 Transceiver type
Permissible load/channel		max. 20 mA
Signal level	high low at I_{Load} = 20 mA	typ 3.8 V typ 1.3 V
Short-circuit proof outputs		yes [1]
Singleturn resolution		10 ... 14 bit and 17 bit [2]
Number of revolutions		4096 (12 bit)
Code		Binary or Gray
SSI clock rate		< 14 bit: 50 kHz ... 2 MHz
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.

Data refresh rate	up to 14 bit for 15 ... 17 bit	< 1 µ < 4 µs
Status and Parity bit		upon request

SET input

Input		high active
Input type		Comparator
Signal level	high low	min. 60 % of +V max. +V max. 25 % of +V (+V = Power supply)
Input current		< 0.5 mA
Min. pulse duration (SET)		10 ms
Timeout after SET signal		14 ms
Response time (DIR input)		1 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.

DIR input

A HIGH signal switches the direction of rotation from the default cw to ccw. The reverse 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.

Status output

Output driver		Open Collector, internal pull-up resistor 22 kOhm
Permissible load		max. 20 mA
Signal level	high low	+V < 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 22k) in normal operation.

Power-ON delay

After Power-On, the device requires a time of approximately 150 ms before valid data can be read.

BiSS-C interface

Singleturn resolution	10 ... 14 bit and 17 bit [2]
Number of revolutions	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	≤ 1 µs

Note:
- Bidirectional, factory programmable parameters are: resolution, code, direction, alarms and warnings
- CRC data verification

1) Short-circuit with 0 V or output, only one channel at a time, supply voltage correctly applied
2) Other options upon request

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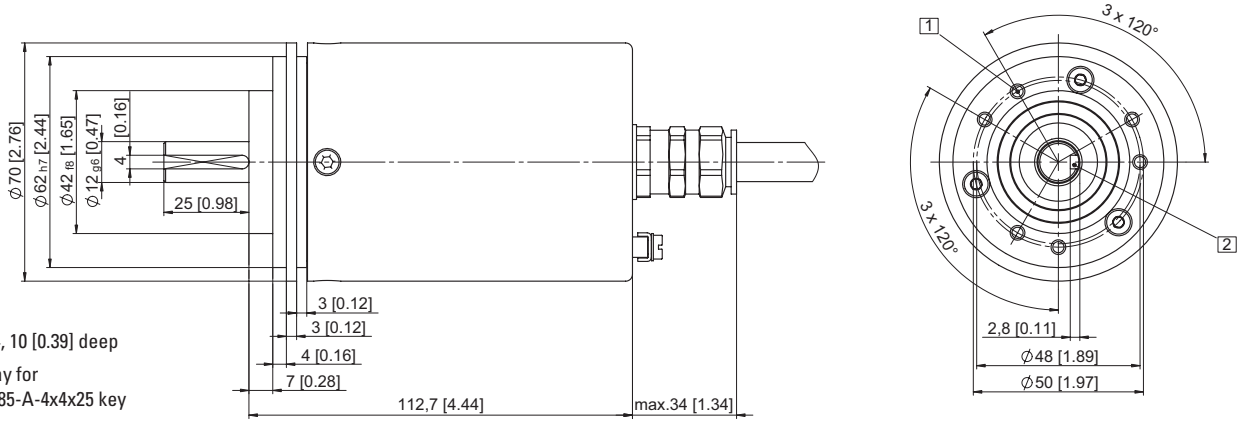
Terminal assignment

Interface	Type of connection	Features	Cable													
			Signal:	0 V	+V	+C	-C	+D	-D	SET	DIR	A	$\overline{A}$	B	$\overline{B}$	PE	PE
4	1, 2, A, B	SET, DIR	Cable marking:	6	1	2	3	4	5	11	12	7	8	9	10	YE/GN	Shield

+V: Encoder power supply +V DC
0 V: Encoder Ground GND (0 V)
+C, -C: Clock signal
+D, -D: Data signal
SET: Set input. The current position becomes defined as position zero.
DIR: Direction input. If this input is active, output values are decreasing when shaft is turned clockwise
PE: Protective earth
A, $\overline{A}$: Incremental output channel A
B, $\overline{B}$: Incremental output channel B

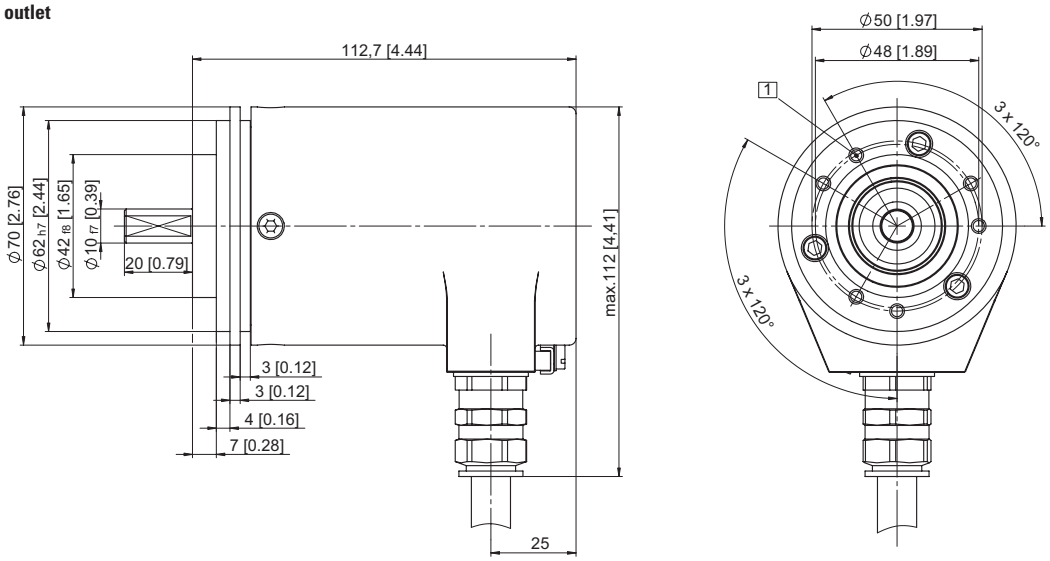
Dimensions

Shaft type 1 with axial cable outlet



1 6 x M4, 10 [0.39] deep
2 Keyway for DIN6885-A-4x4x25 key

Shaft type 2 with radial cable outlet



1 6 x M4, 10 [0.39] deep