Standard, ATEX / IECEx – mining M2 optical | **Sendix 7158 / 7178 (shaft / hollow shaft)** | **PROFIBUS DP**

The Sendix 7158 / 7178 absolute singleturn encoders in a compact 70 mm stainless-steel housing, with a PROFIBUS interface and optical sensor technology have an ATEX/IECEx mining M2 approval.

These shock and vibration-resistant encoders operate flexibly with a resolution of up to 16 bits; they are also available with axial and radial cable outlets.

Ex approval | Safety-Lock™ | High rotational speed | High protection level (IP) | High shaft load capacity | Shock / vibration resistant | Magnetic field proof | Short-circuit proof | Reverse polarity protection | Optical sensor

Compact and safe

- Can be used even when space is tight.
- Minimal installation depth, diameter 70 mm.
- Compact cable outlet axial or radial.
- Remains sealed even in harsh everyday use and ensures highest safety against field breakdowns (IP67 protection).

Explosion protection

- Mining M2 approval.
- "Flame-proof enclosure" construction.
- ATEX with EU type examination certificate.
- IECEx with certificate of conformity (CoC).

Order code Shaft version

8.7158	.	2	X	3	X	.	31	11	.	XXXX
Type		a	b	c	d		e			f [1]

a *Flange*
2 = 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*
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

Order code Hollow shaft

8.7178	.	X	X	3	X	.	31	11	.	XXXX
Type		a	b	c	d		e			f [1]

a *Flange*
2 = with spring element, short
6 = 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*
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

1) Not applicable with connection types 1 and 2.

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Standard, ATEX/IECEx – mining M2 optical | **Sendix 7158 / 7178 (shaft / hollow shaft)** | **PROFIBUS DP**

Technical data

Explosion protection

ATEX

EU type-examination certificate	IBExU 15 ATEX 1057 X
Category	
Sendix 7158 – 6000 rpm	Ex I M2 Ex db I/IIC T4 Mb
Sendix 7158 – 2000 rpm	Ex I M2 Ex db I/IIC T5 Mb
Sendix 7178 – 3000 rpm	Ex I M2 Ex db I/IIC T4 Mb
Sendix 7178 – 2000 rpm	Ex I M2 Ex db I/IIC 120°C (T4) Mb
Relevant standards	EN 60079-0:2018
ATEX guideline 2014/34/EU	EN 60079-1:2014

IECEx

Certificate of Conformity (CoC)	IECEx IBE 15.0019 X
Category	
Sendix 7158 – 6000 rpm	Ex db I/IIC T4 Mb
Sendix 7158 – 2000 rpm	Ex db I/IIC T5 Mb
Sendix 7178 – 3000 rpm	Ex db I/IIC T4 Mb
Sendix 7178 – 2000 rpm	Ex db I/IIC 120°C (T4) Mb
Relevant standards	IEC 60079-0:2017 IEC 60079-1:2014

EMC

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

Approvals

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

Electrical characteristics

Supply voltage	10 ... 30 V DC
Current consumption (no load)	max. 110 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. 2.8 kg [98.77 oz]
Protection acc. to EN 60529		IP67
Ambient temperature		-40 °C ... +60 °C [-4 °F ... +140 °F] Please note the specifications for temperature class in EU type-examination certificate!
Material	shaft	stainless steel
	flange / housing	stainless steel
	cable	PUR
Shock resistance acc. to EN/IEC 60068-2-27		1000 m/s^2, 6 ms
Vibration resistance acc. to EN/IEC 60068-2-6		100 m/s^2, 55 ... 2000 Hz

Interface characteristics PROFIBUS DP

Resolution	1 ... 65536 (16 bit), scalable default: 8192 (13 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.

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Terminal assignment

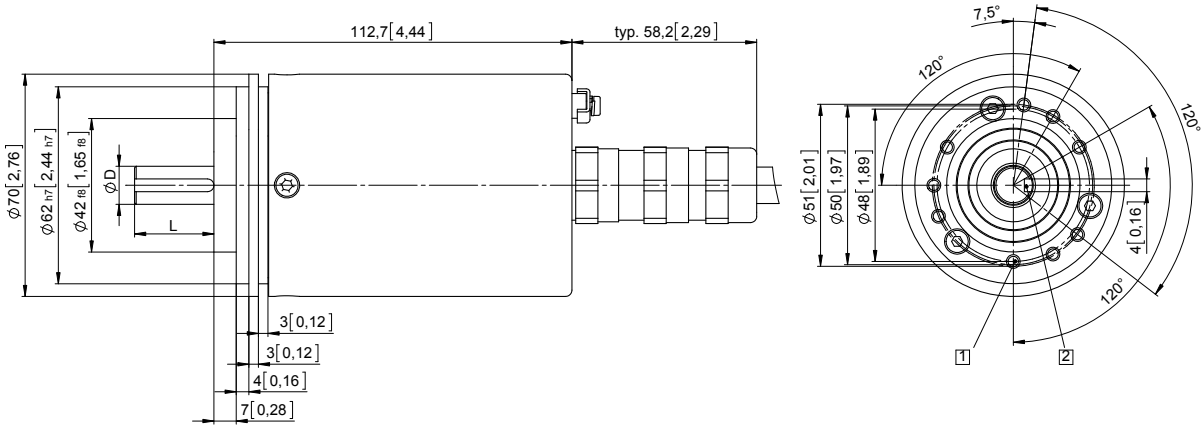
Interface	Type of connection	Cable (isolate unused cores individually before initial start-up)								
3	1, 2, A, B	Signal:	0 V	+V	PB_A IN	PB_B IN	BUS_GND	BUS_ VDC	PB_A OUT	PB_B OUT
		Core marking:	1	2	4	5	6	7	8	9

Dimensions shaft version

Dimensions in mm [inch]

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

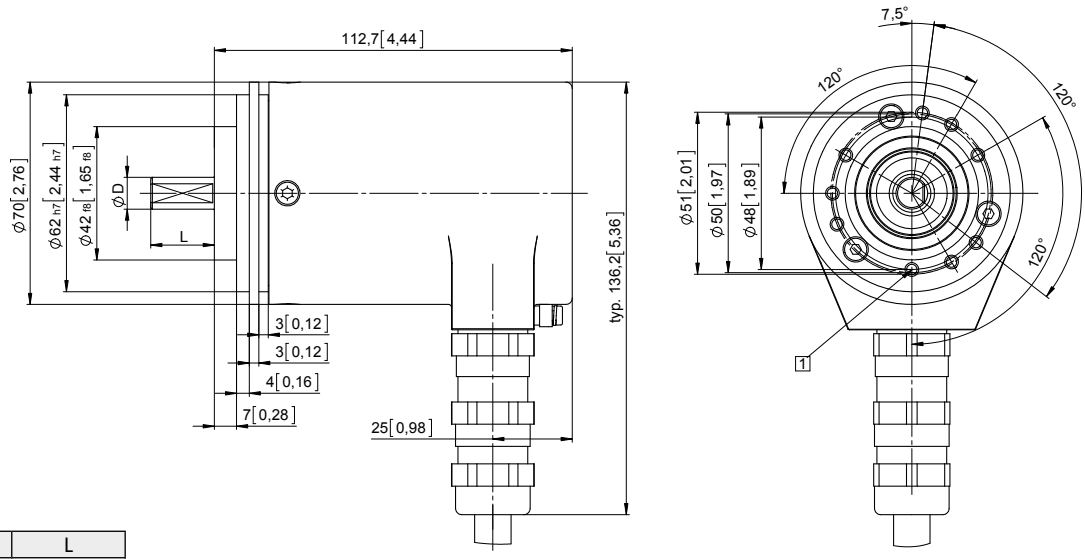
1 9 x M4, 10 [0.39] deep
2 Keyway for DIN 6885-A-4x4x25 key



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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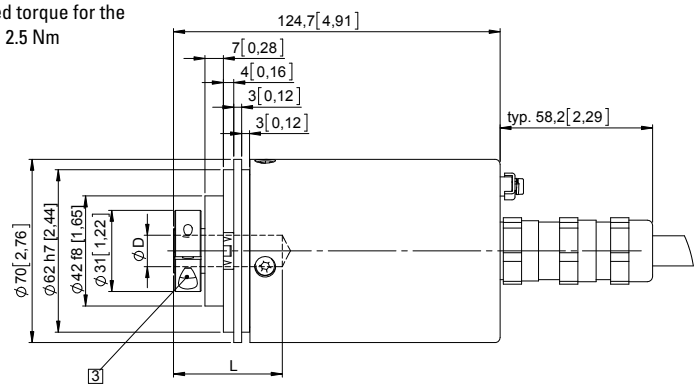
Standard, ATEX/IECEx – mining M2 optical | **Sendix 7158 / 7178 (shaft / hollow shaft)** | **PROFIBUS DP**

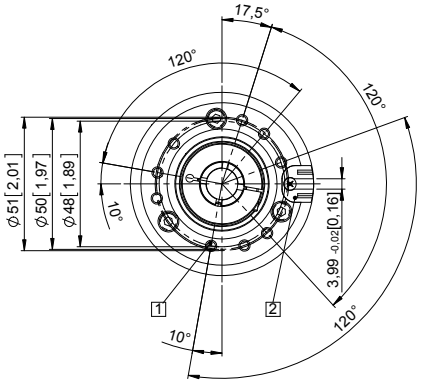
Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, short
Flange type 2

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

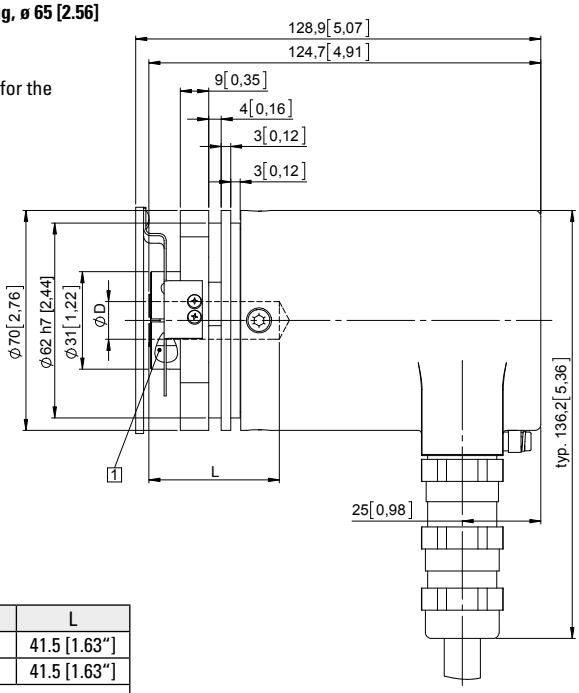


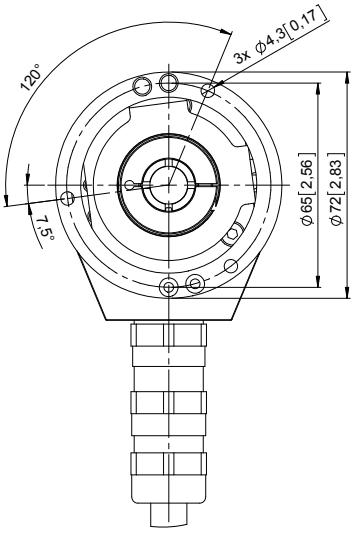


D	Fit	L
12 [0.47]	H7	41.5 [1.63“]
14 [0.55]	H7	41.5 [1.63“]
L = insertion depth max. blind hollow shaft		

Flange with stator coupling, ø 65 [2.56]
Flange type 6

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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