

Incremental encoders

Standard optical

Sendix 5000 / 5020 (shaft / hollow shaft)

Push-Pull / RS422 / Open collector



Due to their sturdy bearing construction in Safety-Lock™ Design, the Sendix 5000 and 5020 offer high resistance against vibration and installation errors.

The rugged housing, high protection level of up to IP67, as well as the wide temperature range of -40°C up to +85°C, make this product range the perfect encoder for all applications.



Safety-Lock™



High rotational speed



Temperature range
-40°C... +85°C



High protection level
IP



High shaft load capacity



Shock / vibration resistant



Magnetic field proof



Short-circuit proof



Reverse polarity protection



Optical sensor

Robust performance

- Increased resistance against vibrations and tolerance of installation errors, elimination of machine downtime and repairs thanks to sturdy bearing construction in "Safety-Lock™ Design".
- Ensures highest safety against field breakdowns and is thus suitable also for outside use thanks to its resistant die-cast housing and protection up to IP67.
- Undetachable clamping ring on hollow shaft encoders.
- Wide temperature range, -40°C ... +85°C.

NEW:

- Higher shock resistance.
- Higher vibration resistance.
- IP66 and IP67 protection level in one version.

Many variants

- Suitable connection variant for every specific case: cable connection, M12, M23, MIL and Sub-D connector.
- Reliable mounting in a wide variety of installation situations: comprehensive and proven fixing possibilities.
- Compatible with all US and European standards.
- Max. 5000 pulses per revolution.

NEW:

- Double number of standard pulse numbers.
- Variants with connector fitted in the cable – for error-free electrical connection to your control.
- Additional connector variants (M12 / 5-pin, Sub-D).
- Additional standard cable lengths.

Technology in detail

Robust Safety-Lock™ bearing structure

Cables with fitted connector

Undetachable clamping ring

Slotted clamping ring + slotted shaft


Tangential cable outlet



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Order code	8.5000	.XXXXX	.XXXX	.P	XX	XX			
Shaft version	Type	a	b	c	d	e	f	g	h

<p>a Flange</p> <p>5 = synchro flange, IP66/IP67 \varnothing 50.8 mm [2"]</p> <p>6 = synchro flange, IP65 \varnothing 50.8 mm [2"]</p> <p>A = synchro flange, IP66/IP67 \varnothing 58 mm [2.28"]</p> <p>B = synchro flange, IP65 \varnothing 58 mm [2.28"]</p> <p>7 = clamping flange, IP66/IP67 \varnothing 58 mm [2.28"]</p> <p>8 = clamping flange, IP65 \varnothing 58 mm [2.28"]</p> <p>3 = square flange, IP66/IP67 \square 52.3 mm [2.06"]</p> <p>4 = square flange, IP65 \square 52.3 mm [2.06"]</p> <p>C = square flange, IP66/IP67 \square 63.5 mm [2.5"]</p> <p>D = square flange, IP65 \square 63.5 mm [2.5"]</p> <p>1 = servo flange, IP66/IP67 \varnothing 50.8 mm [2"]</p> <p>2 = servo flange, IP65 \varnothing 50.8 mm [2"]</p> <p>E = servo flange, IP66/IP67 \varnothing 63.5 mm [2.5"]</p> <p>F = servo flange, IP65 \varnothing 63.5 mm [2.5"]</p> <p>G = Euro flange, IP66/IP67 \varnothing 115 mm [4.53"]¹⁾</p> <p>b Shaft ($\varnothing \times L$), with flat</p> <p>1 = \varnothing 6 x 10 mm [0.24 x 0.39"]</p> <p>2 = \varnothing 1/4 x 5/8" (6.35 x 15.875 mm)</p> <p>7 = \varnothing 1/4 x 7/8"</p> <p>6 = \varnothing 8 x 15 mm [0.32 x 0.59"]</p> <p>3 = \varnothing 10 x 20 mm [0.39 x 0.79"]</p> <p>4 = \varnothing 3/8 x 5/8" (9.5 x 15.875 mm)</p> <p>8 = \varnothing 3/8 x 7/8"</p> <p>B = \varnothing 11 x 33 mm [0.43 x 1.30"], with feather key shaft slot²⁾</p> <p>5 = \varnothing 12 x 20 mm [0.47 x 0.79"]</p> <p>c Output circuit / power supply</p> <p>4 = RS422 (with inverted signal) / 5 V DC</p> <p>1 = RS422 (with inverted signal) / 5 ... 30 V DC</p> <p>2 = Push-Pull (7272 compatible with inverted signal) / 5 ... 30 V DC</p> <p>5 = Push-Pull (with inverted signal) / 10 ... 30 V DC</p> <p>8 = Push-Pull (7272 compatible with inverted signal), without capacitor / 5 ... 30 V DC³⁾</p> <p>3 = Open collector (with inverted signal) / 5 ... 30 V DC</p>	<p>d Type of connection – cable</p> <p>1 = axial cable, 1 m [3.28 ft] PVC</p> <p>A = axial cable, special length PVC *)</p> <p>2 = radial cable, 1 m [3.28 ft] PVC</p> <p>B = radial cable, special length PVC *)</p> <p>Type of connection – connector</p> <p>P = axial M12 connector, 5-pin⁴⁾</p> <p>R = radial M12 connector, 5-pin⁴⁾</p> <p>3 = axial M12 connector, 8-pin</p> <p>4 = radial M12 connector, 8-pin</p> <p>7 = axial M23 connector, 12-pin</p> <p>8 = radial M23 connector, 12-pin</p> <p>Y = radial MIL connector, 10-pin</p> <p>W = radial MIL connector, 7-pin⁴⁾</p> <p>9 = radial MIL connector, 6-pin⁴⁾</p> <p>Type of connection – connector with cable</p> <p>L = radial cable with M12 connector, 8-pin, special length PVC *)</p> <p>M = radial cable with M23 connector, 12-pin, special length PVC *)</p> <p>N = radial cable with Sub-D connector, 9-pin, special length PVC *)</p> <p>*) Available special lengths (connection types A, B, L, M, N): 0.3, 0.5, 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20 m [0.98, 1.64, 3.28, 6.56, 9.84, 13.12, 16.40, 19.69, 26.25, 32.80, 39.37, 49.21, 65.62 ft] order code expansion .XXXX = length in dm ex.: 8.5000.814A.1024.0030.PXXXX (for cable length 3 m)</p> <p>e Pulse rate</p> <p>1, 2, 4, 5, 10, 12, 14, 20, 25, 28, 30, 32, 36, 50, 60, 64, 80, 100, 120, 125, 150, 180, 200, 240, 250, 256, 300, 342, 360, 375, 400, 500, 512, 600, 625, 720, 800, 900, 1000, 1024, 1200, 1250, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000 (e.g. 100 pulses => 0100)</p> <p>f Special output signal formats</p> <p>00 = standard output other = see page 74</p> <p>g Capacitor</p> <p>0 = standard A = no bypass capacitor (vector motor) (only valide with output circuits 1, 3, 4, 5)</p> <p>h Special connector pin configuration</p> <p>0 = standard wiring other = see page 73</p> <p><i>Optional on request</i></p> <ul style="list-style-type: none"> - other pulse rates - Ex 2/22⁵⁾ - surface protection salt spray <p><i>Salt spray tested as standard type (deliverable as from 1 unit)</i></p> <p>8.5000.73X4.XXXX-C</p> 
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1) Only in conjunction with shaft type B.
2) Only in conjunction with flange type G.
3) Attention: no CE types!
4) Without inverted signal.
5) For the cable connection type, cable material PUR.

Incremental encoders

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Push-Pull / RS422 / Open collector

**Order code
Hollow shaft**

8.5020 . **XXXXX** . **XXXX** . **P** **XXXX**
Type a b c d e f g h

a Flange

- 1 = with spring element, long, IP66/IP67
- 2 = with spring element, long, IP65
- 3 = with fastening arm, long, IP66/IP67
- 4 = with fastening arm, long, IP65
- 7 = with stator coupling, IP66/IP67 \varnothing 65 mm [2.56"]
- 8 = with stator coupling, IP65 \varnothing 65 mm [2.56"]
- C = with stator coupling, IP66/IP67 \varnothing 63 mm [2.48"]
- D = with stator coupling, IP65 \varnothing 63 mm [2.48"]
- 5 = with stator coupling, IP66/IP67 \varnothing 57.2 mm [2.25"]
- 6 = with stator coupling, IP65 \varnothing 57.2 mm [2.25"]

b Hollow shaft

- 1 = \varnothing 6 mm [0.24"]
- 2 = \varnothing 1/4"
- 9 = \varnothing 8 mm [0.32"]
- 4 = \varnothing 3/8"
- 3 = \varnothing 10 mm [0.39"]
- 5 = \varnothing 12 mm [0.47"]
- 6 = \varnothing 1/2"
- A = \varnothing 14 mm [0.55"]
- 8 = \varnothing 15 mm [0.59"]
- 7 = \varnothing 5/8"

c Output circuit / power supply

- 4 = RS422 (with inverted signal) / 5 V DC
- 1 = RS422 (with inverted signal) / 5 ... 30 V DC
- 2 = Push-Pull (7272 compatible with inverted signal) / 5 ... 30 V DC
- 5 = Push-Pull (with inverted signal) / 10 ... 30 V DC
- 8 = Push-Pull (7272 compatible with inverted signal), without capacitor / 5 ... 30 V DC ¹⁾
- 3 = Open collector (with inverted signal) / 5 ... 30 V DC

d Type of connection – cable

- 1 = radial cable, 1 m [3.28 ft] PVC
- A = radial cable, special length PVC *)
- E = tangential cable, 1 m [3.28 ft] PVC
- F = tangential cable, special length PVC *)

Type of connection – connector

- R = radial M12 connector, 5-pin ²⁾
- 2 = radial M12 connector, 8-pin
- 4 = radial M23 connector, 12-pin
- 6 = radial MIL connector, 7-pin ²⁾
- 7 = radial MIL connector, 10-pin

Type of connection – connector with cable

- H = tangential cable, 0.3 m [0.98 ft] PVC, incl. M12 connector, 8-pin for central fastening
- L = tangential cable with M12 connector, 8-pin, special length PVC *)
- M = tangential cable with M23 connector, 12-pin, special length PVC *)
- N = tangential cable with Sub-D connector, 9-pin, special length PVC *)

*) Available special lengths (connection types A, F, L, M, N):
 0.3, 0.5, 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20 m [0.98, 1.64, 3.28, 6.56, 9.84, 13.12, 16.40, 19.69, 26.25, 32.80, 39.37, 49.21, 65.62 ft]
 order code expansion .XXXX = length in dm
 ex.: 8.5020.855A.1024.0030.PXXXX (for cable length 3 m)

e Pulse rate

- 1, 2, 4, 5, 10, 12, 14, 20, 25, 28, 30, 32, 36, 50, 60, 64, 80, 100, 120, 125, 150, 180, 200, 240, 250, 256, 300, 342, 360, 375, 400, 500, 512, 600, 625, 720, 800, 900, 1000, 1024, 1200, 1250, 1500, 1800, 2000, 2048, 2500, 3000, 3600, 4000, 4096, 5000
 (e.g. 100 pulses => 0100)

f Special output signal formats

- 00 = standard output
- other = see page 74

g Capacitor

- 0 = standard
- A = no bypass capacitor (vector motor)
 (only valide with output circuits 1, 3, 4, 5)

h Special connector pin configuration

- 0 = standard wiring
- other = see page 73

Optional on request

- other pulse rates
- Ex 2/22 (not for type of connection E, F, H, L, M, N) ³⁾
- surface protection salt spray

*Salt spray tested as standard type
 (deliverable as from 1 unit)*



8.5020.18X2.XXXX-C
 8.5020.1AX2.XXXX-C

1) Attention: no CE types!
 2) Without inverted signal.
 3) For the cable connection type, cable material PUR.

Incremental encoders

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Mounting accessory for shaft encoders		Order no.
Coupling	bellows coupling \varnothing 19 mm [0.75"] for shaft 6 mm [0.24"]	8.0000.1102.0606
	bellows coupling \varnothing 19 mm [0.75"] for shaft 10 mm [0.39"]	8.0000.1102.1010

Mounting accessory for hollow shaft encoders		Dimensions in mm [inch]	Order no.
Cylindrical pin, long	with fixing thread		8.0010.4700.0000
for flange with spring element (flange type 1 + 2)			

Isolation / adapter inserts for hollow shaft encoders order code 8.5020.X8XX.XXXX		D1	Isolation insert
Thermal and electrical isolation of the encoders (Temperature range -40 ... +115°C [-40°F ... +239°F]) Isolation inserts prevent currents from passing through the encoder bearings. These currents can occur when using inverter controlled three-phase or AC vector motors and considerably shorten the service life of the encoder bearings. In addition the encoder is thermally isolated as the plastic does not transfer the heat to the encoder.		6 mm [0.24"]	8.0010.4021.0000
		8 mm [0.32"]	8.0010.4020.0000
		10 mm [0.39"]	8.0010.4023.0000
		12 mm [0.47"]	8.0010.4025.0000
		1/4"	8.0010.4022.0000
		3/8"	8.0010.4024.0000
		1/2"	8.0010.4026.0000



Connection technology		Order no.
Cordset, pre-assembled	M12 female connector with coupling nut, 8-pin 2 m [6.56 ft] PVC cable	05.00.6041.8211.002M
	M23 female connector with coupling nut, 12-pin 2 m [6.56 ft] PVC cable	8.0000.6901.0002
Connector, self-assembly (straight)	M12 female connector with coupling nut, 8-pin	05.CMB 8181-0
	M23 female connector with coupling nut, 12-pin	8.0000.5012.0000
	MIL female connector with coupling nut, 10-pin	8.0000.5062.0000

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.

Technical data

Mechanical characteristics		
Maximum speed	IP65	12000 min ⁻¹ 6000 min ⁻¹ (continuous)
	IP66/IP67	6000 min ⁻¹ 3000 min ⁻¹ (continuous)
Mass moment of inertia	shaft version	approx. 1.8 x 10 ⁻⁶ kgm ²
	hollow shaft version	approx. 6 x 10 ⁻⁶ kgm ²
Starting torque at 20°C [68°F]	IP65	< 0.01 Nm
	IP66/IP67	< 0.05 Nm
Shaft load capacity	radial	100 N
	axial	50 N
Weight		approx. 0.4 kg [14.11 oz]
Protection acc. to EN 60529	without shaft seal	IP65
	with shaft seal	IP66/IP67
Working temperature range		-40°C ¹⁾ ... +85°C [-40°F ¹⁾ ... +185°F]
Material	shaft	stainless steel
Shock resistance acc. to EN 60068-2-27		3000 m/s ² , 6 ms ²⁾
Vibration resistance acc. to EN 60068-2-6		300 m/s ² , 10 ... 2000 Hz ³⁾

1) With connector: -40°C [-40°F], cable fixed: -30°C [-22°F], cable moved: -20°C [-4°F].
 2) For MIL connectors: 2500 m/s²
 3) For MIL connectors: 100 m/s²

Incremental encoders

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Electrical characteristics						
Output circuit	RS422 (TTL compatible)	RS422 (TTL compatible)	Push-Pull	Push-Pull (7272 compatible)	Push-Pull (7272 compatible, without capacitor)	Open collector (7273)
Order code	1	4	5, 7	2	8	3
Power supply	5 ... 30 V DC	5 V DC (±5 %)	10 ... 30 V DC	5 ... 30 V DC	5 ... 30 V DC	5 ... 30 V DC
Power consumption (no load)	typ. 40 mA max. 90 mA	typ. 40 mA max. 90 mA	typ. 50 mA max. 100 mA	typ. 50 mA max. 100 mA	typ. 50 mA max. 100 mA	100 mA
Permissible load / channel	max. +/- 20 mA	max. +/- 20 mA	max. +/- 20 mA	max. +/- 20 mA	max. +/- 20 mA	20 mA sink at 30 V DC
Pulse frequency	max. 300 kHz	max. 300 kHz	max. 300 kHz	max. 300 kHz ¹⁾	max. 300 kHz	max. 300 kHz
Signal level	HIGH min. 2.5 V LOW max. 0.5 V	min. 2.5 V max. 0.5 V	min +V - 1.0 V max. 0.5 V	min. +V - 2.0 V max. 0.5 V	min. +V - 2.0 V max. 0.5 V	
Rising edge time t_r	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs	max. 1 µs	
Falling edge time t_f	max. 200 ns	max. 200 ns	max. 1 µs	max. 1 µs	max. 1 µs	
Short circuit proof outputs ²⁾	yes ³⁾	yes ³⁾	yes	yes	yes ³⁾	yes
Reverse polarity protection of the power supply	yes	no	yes	no	no	no
UL approval	file 224618					
CE compliant acc. to	EMC guideline 2014/30/EC RoHS guideline 2011/65/EU					

Terminal assignment – Standard wiring

Output circuit	Type of connection	Cable (isolate unused wires individually before initial start-up)												
1, 2, 3, 4, 5, 8	5000: 1, 2, A, B	Signal:	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp	
	5020: 1, A, E, F	Core colour:	WH	BN	GY PK	RD BU	GN	YE	GY	PK	BU	RD	shield	

Output circuit	Type of connection	M12 connector, 5-pin							
1, 2, 3, 4, 5, 8	5000: P, R	Signal:	0 V	+V	A	B	0	\perp	
	5020: R	Pin:	1	2	3	4	5	PH ¹⁾	

Output circuit	Type of connection	M12 connector, 8-pin										
1, 2, 3, 4, 5, 8	5000: 3, 4, L	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp	
	5020: 2, H ²⁾ , L	Pin:	1	2	3	4	5	6	7	8	PH ⁴⁾	

Output circuit	Type of connection	M23 connector, 12-pin												
1, 2, 3, 4, 5, 8	5000: 7, 8, M	Signal:	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp	
	5020: 4, M	Pin:	10	12	11	2	5	6	8	1	3	4	PH ⁴⁾	

Output circuit	Type of connection	MIL connector, 10-pin										
1, 2, 3, 4, 5, 8	5000: Y	Signal:	0 V	+V	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	5020: 7	Pin:	F	D	E	A	G	B	H	C	I	J

Output circuit	Type of connection	MIL connector, 7-pin							
1, 3, 4, 5, 8	5000: W	Signal:	0 V	+V	+Vsens	A	B	0	\perp
	5020: 6	Pin:	F	D	E	A	B	C	G

Output circuit	Type of connection	MIL connector, 6-pin							
1, 3, 4, 5, 8	5000: 9	Signal:	0 V	+V	A	B	0	\perp	
		Pin:	A	B	E	D	C		

Output circuit	Type of connection	Sub-D connector, 9-pin									
1, 2, 3, 4, 5, 8	5000: N	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
	5020: N	Pin:	9	5	1	6	2	7	3	8	PH ⁴⁾

1) Max. recommended cable length 30 m [98.43 ft].

2) If power supply correctly applied.

3) Only one channel allowed to be shorted-out:

at +V= 5 V DC, short-circuit to channel, 0 V, or +V is permitted.
at +V= 5 ... 30 V DC, short-circuit to channel or 0 V is permitted.

4) PH = shield is attached to connector housing.

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Terminal assignment – Special connector pin configuration

Order code ^h	Output circuit	Type of connection	M12 connector, 8-pin									
7	1, 2, 3, 4, 5, 8	5000: 3, 4, L	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		5020: 2, H ²⁾ , L	Pin:	7	2	1	3	4	5	6	8	PH ¹⁾

Order code ^h	Output circuit	Type of connection	MIL connector, 6-pin						
1	1, 3, 4, 8	5000: 9	Signal:	0 V	+V	A	B	0	\perp
			Pin:	A, F	B	D	E	C	

Order code ^h	Output circuit	Type of connection	MIL connector, 7-pin							
4	1, 3, 4, 8	5000: W	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	\perp
		5020: 6	Pin:	F	D	A	C	B	E	G

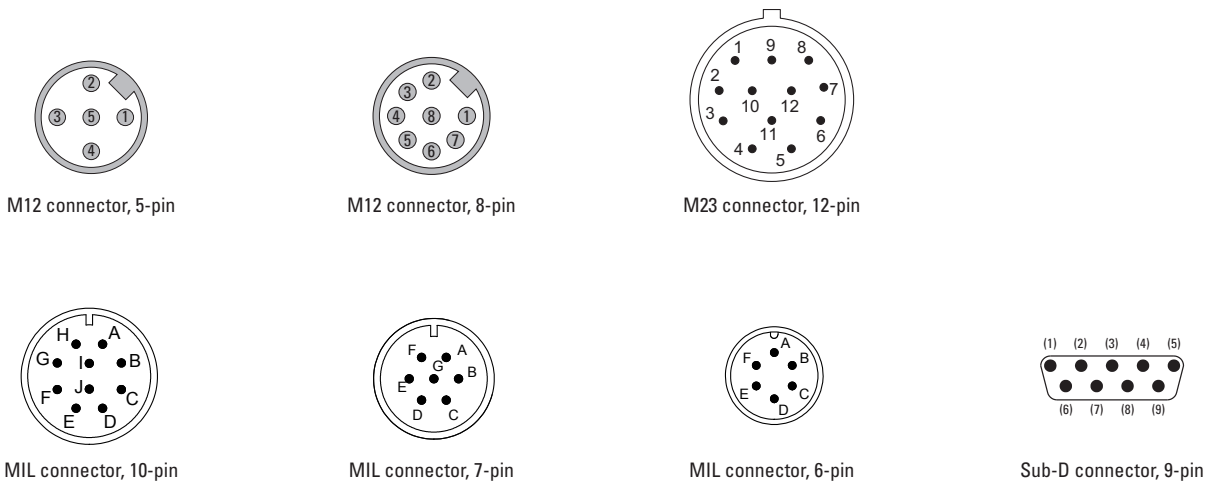
Order code ^h	Output circuit	Type of connection	MIL connector, 10-pin									
6	1, 2, 3, 4, 5, 8	5000: Y	Signal:	0 V	+V	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		5020: 7	Pin:	F	D	A	H	B	I	C	J	G

Order code ^h	Output circuit	Type of connection	M12 connector, 5-pin						
9	1, 2, 3, 4, 5, 8	5000: P, R	Signal:	0 V	+V	A	B	0	\perp
		5020: R	Pin:	3	1	4	2	5	PH ¹⁾

+V: Encoder power supply +V DC
 0 V: Encoder power supply ground GND (0 V)
 0 V_{sens} / +V_{sens}: Using the sensor outputs of the encoder, the voltage present can be measured and if necessary increased accordingly.

A, \bar{A} : Incremental output channel A
 B, \bar{B} : Incremental output channel B
 0, $\bar{0}$: Reference signal
 PH \perp : Plug connector housing (shield)

Top view of mating side, male contact base



1) PH = shield is attached to connector housing.
 2) With type of connection H shield is not attached to connector housing.

Incremental encoders

Standard optical

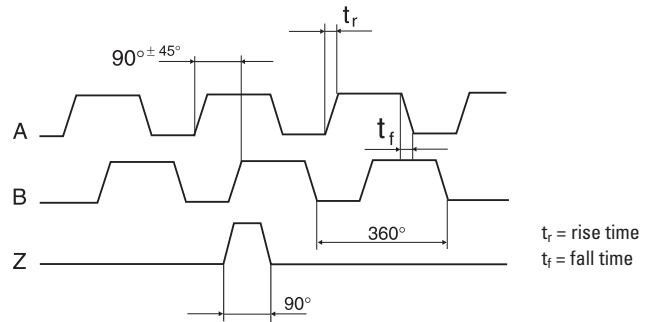
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Special output signal formats

All Kübler encoders come standard with six channels where A leads B in the clockwise direction and the standard index is gated with A & B. The tolerance of the wave form affects the control and, in some cases, may affect the smoothness of system operation.

Wave form tolerances



A leads B when the shaft is rotated in the clockwise direction viewing the shaft or collet end. This is the Kübler standard. This format applies to the pin key codes listed below.		A \bar{A} B \bar{B}
Order code i		
	Z gated with A & B. This is the Kübler standard. Z is 90° wide.	Z \bar{Z}
01	Z gated with B. Z is 180° wide.	Z \bar{Z}
02	Z gated with A. Z is 180° wide.	Z \bar{Z}
03	Z ungated. Z is 330° to 360° wide.	Z \bar{Z}
08	Z is 180° wide	Z \bar{Z}
11	Z is a minimum width of 270° (electrical degrees).	Z \bar{Z}
13	Z gated with \bar{B} . Z is 180° wide.	Z \bar{Z}

B leads A when the shaft is rotated in the clockwise direction viewing the shaft or collet end. This format applies to the pin key codes listed below.		A \bar{A} B \bar{B}
Order code i		
04	Z gated with A & B. Z is 90° wide.	Z \bar{Z}
05	Z gated with B. Z is 180° wide.	Z \bar{Z}
06	Z gated with A. Z is 180° wide.	Z \bar{Z}
07	Z ungated. Z is 330° to 360° wide.	Z \bar{Z}
09	Z gated with \bar{B} . Z is 180° wide.	Z \bar{Z}
10	Z is a negative marker gated with B. Z is 180° wide.	Z \bar{Z}
12	Z has a minimum width of 270° .	Z \bar{Z}

Incremental encoders

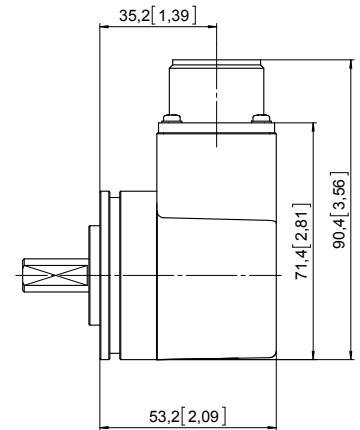
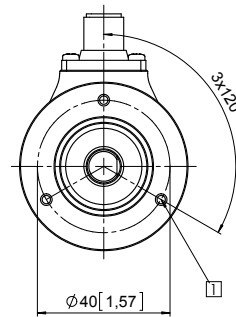
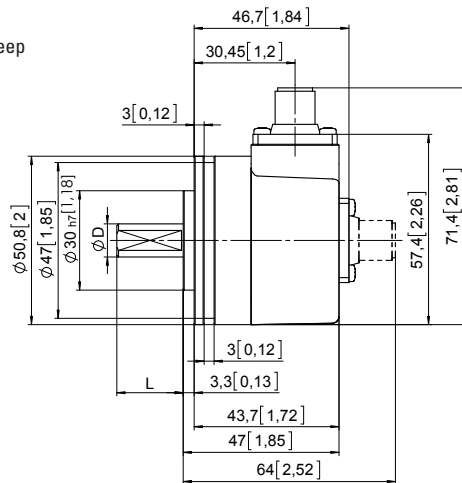
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Dimensions shaft version

Dimensions in mm [inch]

Synchro flange, \varnothing 50.8 [2] Flange type 5 and 6

1 3 x M3, 6 [0.24] deep

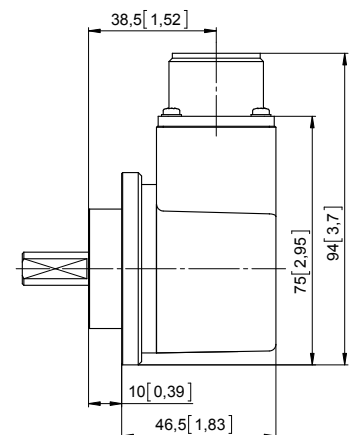
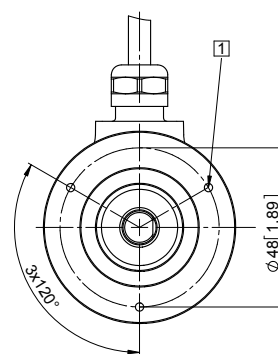
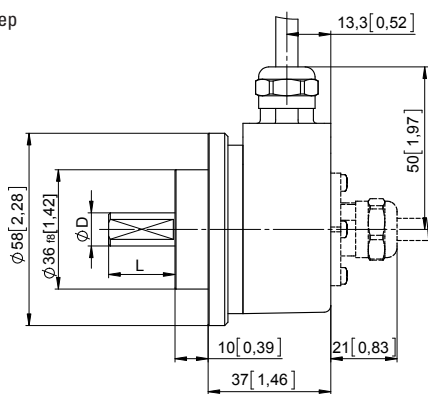


MIL-connector version

D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	h7	20 [0.79]
1/4"	h7	5/8"
3/8"	h7	5/8"
1/4"	h8	7/8"
3/8"	h8	7/8"

Clamping flange, \varnothing 58 [2.28] Flange type 7 and 8

1 3 x M3, 6 [0.24] deep



MIL-connector version

D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	h7	20 [0.79]
1/4"	h7	5/8"
3/8"	h7	5/8"
1/4"	h8	7/8"
3/8"	h8	7/8"

Incremental encoders

Standard optical

Sendix 5000 / 5020 (shaft / hollow shaft)

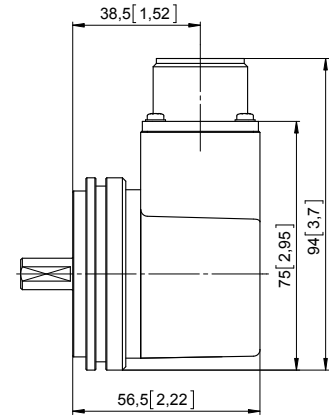
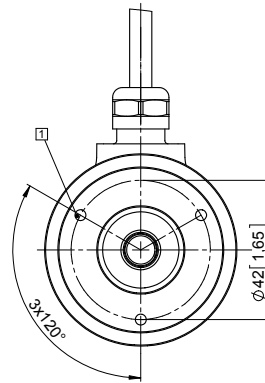
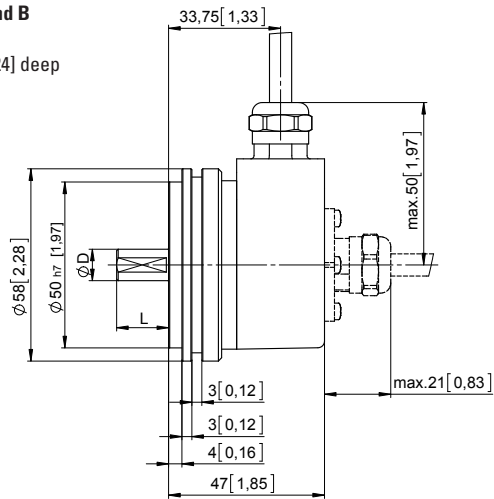
Push-pull / RS422 / Open collector

Dimensions shaft version

Dimensions in mm [inch]

Synchro flange, \varnothing 58 [2.28]
Flange type A and B

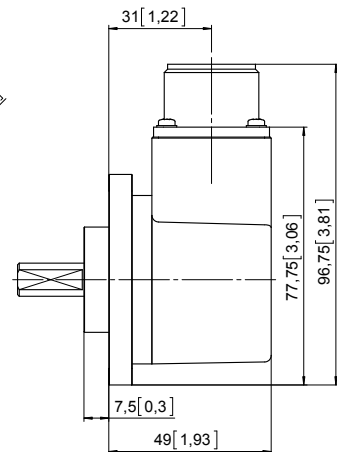
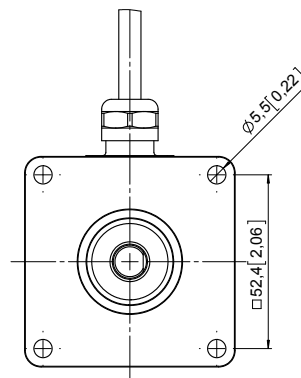
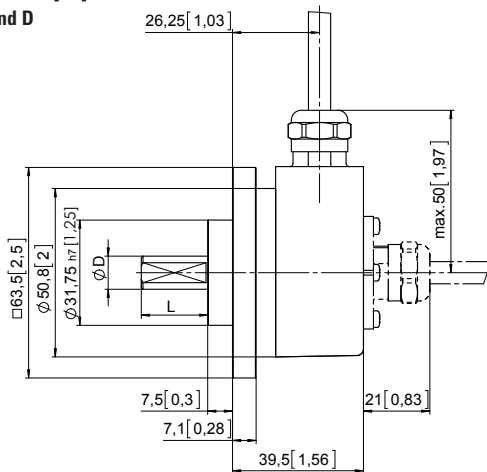
□ 3 x M4, 6 [0.24] deep



MIL-connector version

D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	h7	20 [0.79]
1/4"	h7	5/8"
3/8"	h7	5/8"
1/4"	h8	7/8"
3/8"	h8	7/8"

Square flange, □ 63.5 [2.5]
Flange type C and D



MIL-connector version

D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	h7	20 [0.79]
1/4"	h7	5/8"
3/8"	h7	5/8"
1/4"	h8	7/8"
3/8"	h8	7/8"

Incremental encoders

Standard optical

Sendix 5000 / 5020 (shaft / hollow shaft)

Push-pull / RS422 / Open collector

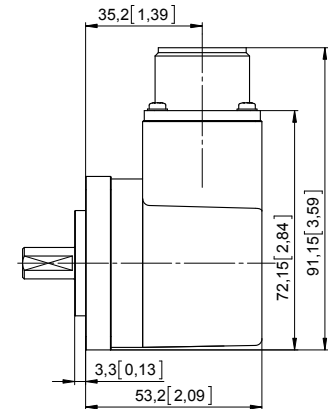
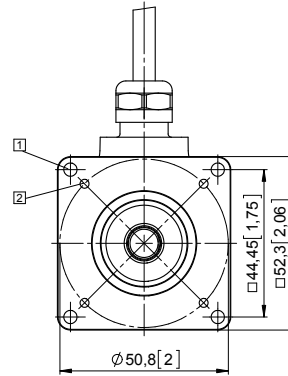
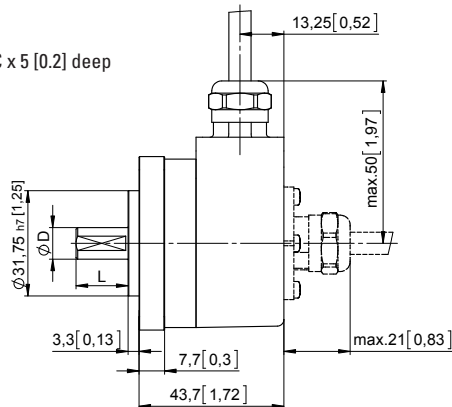
Dimensions shaft version

Dimensions in mm [inch]

Square flange, □ 52.3 [2.06]

Flange type 3 and 4

- 1 \varnothing 4 [0.16]
- 2 6-32 UNC x 5 [0.2] deep



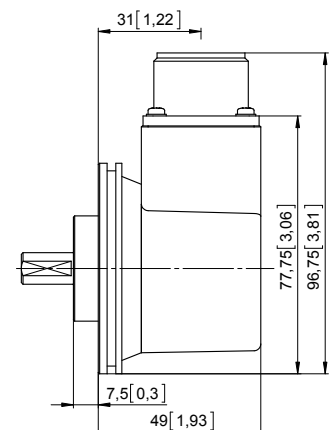
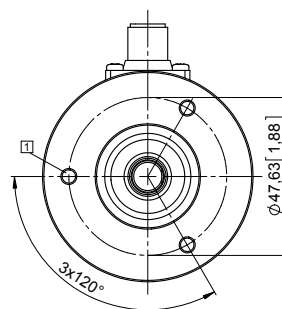
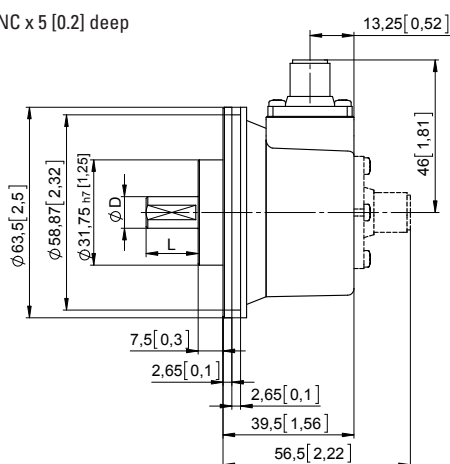
MIL-connector version

D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	h7	20 [0.79]
1/4"	h7	5/8"
3/8"	h7	5/8"
1/4"	h8	7/8"
3/8"	h8	7/8"

Servo flange, \varnothing 63.5 [2.5]

Flange type E and F

- 1 6-32 UNC x 5 [0.2] deep



MIL-connector version

D	Fit	L
6 [0.24]	h7	10 [0.39]
8 [0.32]	h7	15 [0.59]
10 [0.39]	f7	20 [0.79]
12 [0.47]	h7	20 [0.79]
1/4"	h7	5/8"
3/8"	h7	5/8"
1/4"	h8	7/8"
3/8"	h8	7/8"

Incremental encoders

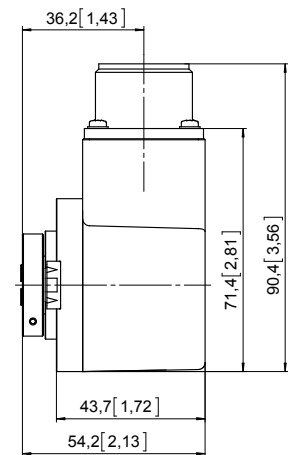
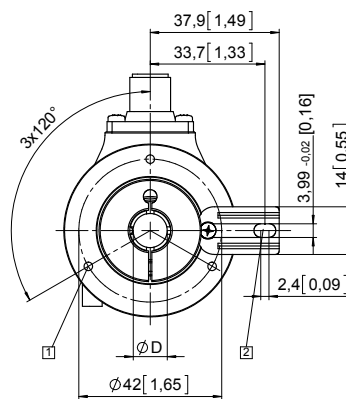
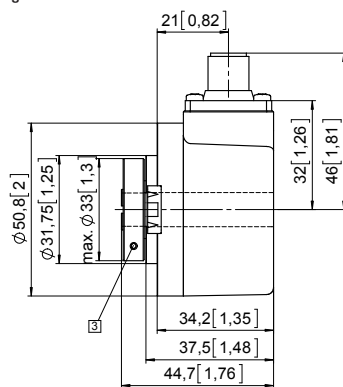
Standard optical	Sendix 5000 / 5020 (shaft / hollow shaft)	Push-pull / RS422 / Open collector
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Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, long Flange type 1 and 2

- 1 3 x M3, 6 [0.24] deep
- 2 Slot spring element, recommendation: cylindrical pin DIN 7, \varnothing 4 [0.16]
- 3 Recommended torque for the clamping ring 0.6 Nm

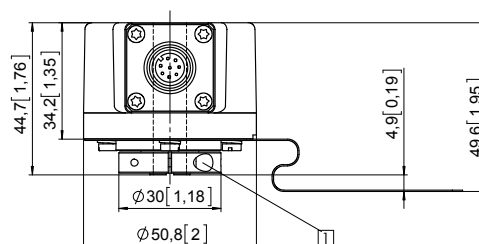
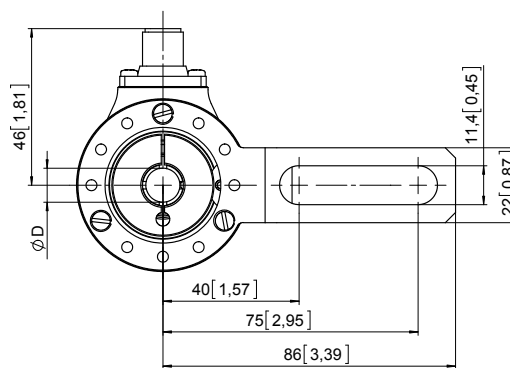


MIL-connector version

D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7
5/8"	H7

Flange with torque stop, long Flange type 3 and 4

- 1 Recommended torque for the clamping ring 0.6 Nm



D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7
5/8"	H7

Incremental encoders

Standard optical

Sendix 5000 / 5020 (shaft / hollow shaft)

Push-pull / RS422 / Open collector

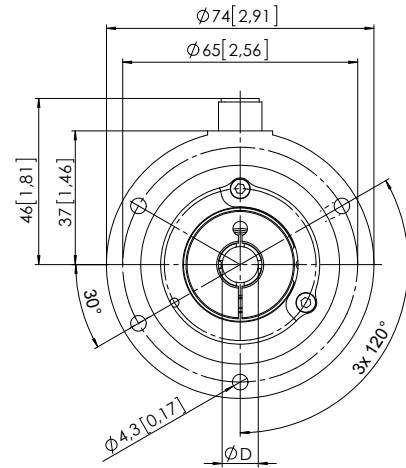
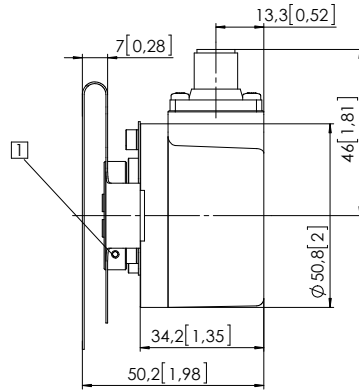
Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with stator coupling, $\varnothing 65$ [2.56] Flange type 7 and 8

- 1 Recommended torque for the clamping ring 0.6 Nm

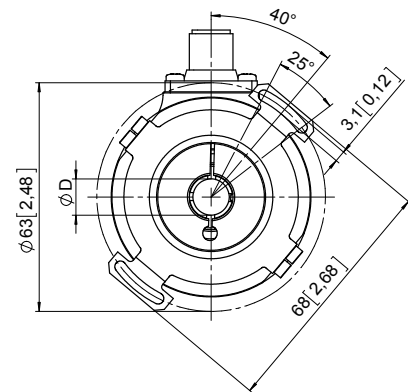
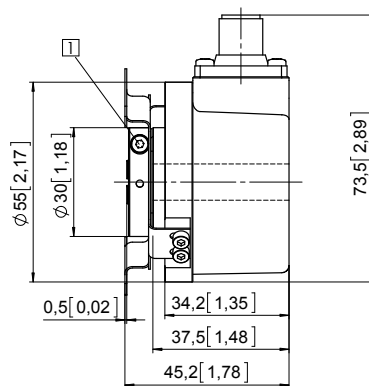
D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7
5/8"	H7



Flange with stator coupling, $\varnothing 63$ [2.48] Flange type C and D

- 1 Recommended torque for the clamping ring 0.6 Nm

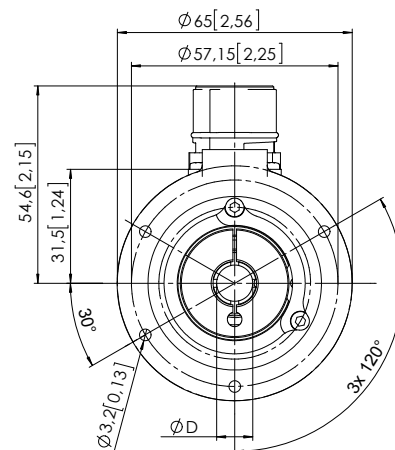
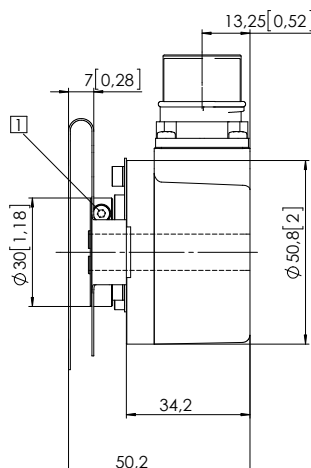
D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7
5/8"	H7



Flange with stator coupling, $\varnothing 57.2$ [2.25] Flange type 5 and 6

- 1 Recommended torque for the clamping ring 0.6 Nm

D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7
5/8"	H7



Incremental encoders

Standard optical	Sendix 5000 / 5020 (shaft / hollow shaft)	Push-pull / RS422 / Open collector
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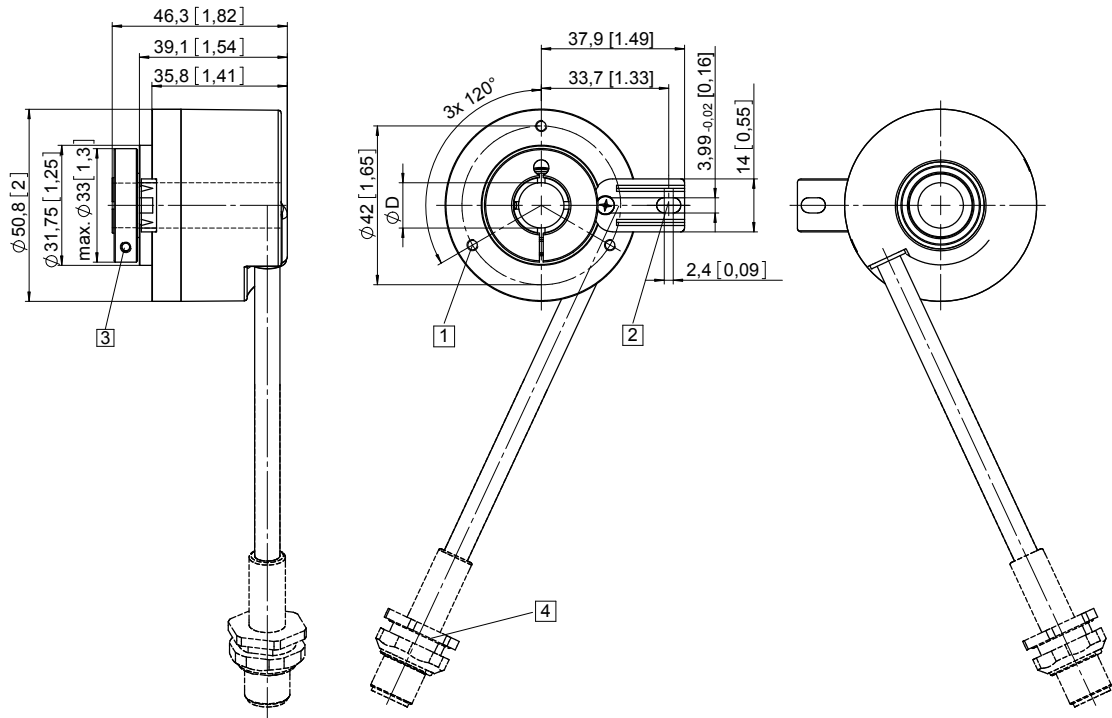
Dimensions hollow shaft version

Dimensions in mm [inch]

Flange with spring element, long and tangential cable outlet

Type of connection E, F and H

- 1 3 x M3, 6 [0.24] deep
- 2 Slot spring element, recommendation: cylindrical pin DIN 7, \varnothing 4 [0.16]
- 3 Recommended torque for the clamping ring 0.6 Nm
- 4 Shield is not applied on connector



D	Fit
6 [0.24]	H7
8 [0.32]	H7
10 [0.39]	H7
12 [0.47]	H7
14 [0.55]	H7
15 [0.59]	H7
1/4"	H7
3/8"	H7
1/2"	H7
5/8"	H7