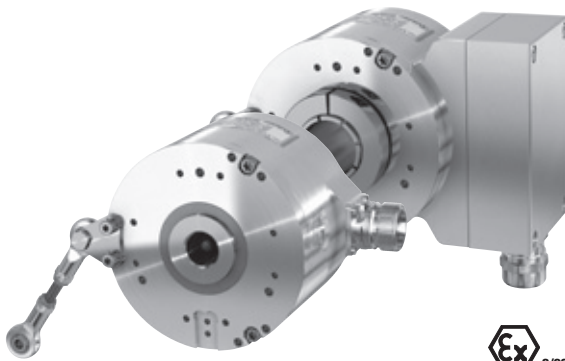


Incremental Encoders

Heavy Duty, optical

Sendix H120 (Hollow shaft)

Push-Pull / RS422



The Sendix Heavy Duty H120 were especially developed for large motors and generators. They are highly accurate and extremely robust thanks to HD-Safety-Lock™ – the Heavy Duty hollow shaft design of the latest generation with sturdy bearing construction and integrated bearing isolation. The dual protection of the shaft, the wide temperature range and the high protection level allow for use even under the harshest conditions.

The very large hollow shaft up to 28 mm plus the wide variety of mounting solutions and connection options offer the very highest degree of flexibility during installation.



Robust

- Integrated bearing isolation up to 2.5 kV for reliable shaft connection
- Extremely high resilience as a result of dual protection of the shaft (shielding cover disk and radial shaft seal), protection levels IP66 and IP67 as well as a seawater-resistant housing
- High shock (200 g) and vibration (15 g) resistance
- High pulse rates up to 5000 ppr

Flexible

- 3 fixing solutions: conical central fastening, cylindrical central fastening or through hollow shaft
- Connection via cable, M12 or M23 connector, terminal box or optical fibre
- Fastening arm on the flange or the cover – allows the device to be rotated as required during mounting.
- Through hollow shaft up to Ø 28 mm

Order code Hollow shaft version

8.H120 . **XXXX** . **XXXX**
Type **a** **b** **c** **d** **e**

a Flange

- 2 = with fastening arm 70 mm¹⁾
- 3 = with fastening arm 100 mm¹⁾
- 4 = with fastening arm 150 mm¹⁾
- 5 = with stator coupling double-winged, Ø fastening 119 mm

b Hollow shaft

- 2 = Ø 16 mm, through hollow shaft
- 3 = Ø 20 mm, through hollow shaft
- 5 = Ø 25 mm, through hollow shaft
- 6 = Ø 25,4 mm (1"), through hollow shaft
- 7 = Ø 28 mm, through hollow shaft
- A = Ø 12 mm, blind hollow shaft with central fastening
- B = Ø 16 mm, blind hollow shaft with central fastening
- K = cone Ø 17 mm, 1 : 10, blind hollow shaft with central fastening

c Output circuit / Power supply

- 1 = RS422 (with inverted signal) / 10 ... 30 V DC
- 4 = RS422 (with inverted signal) / 5 V DC
- 5 = Push-pull (with inverted signal) / 10 ... 30 V DC

d Type of connection

- 1 = radial cable (1 m PVC cable)
- 2 = M12 connector, 8-pin, radial, ccw
- 4 = M23 connector, 12-pin, radial, ccw
- D = M23 connector, 12-pin, radial, cw
- K = Terminal box with plug-in spring terminal connectors, rotatable through 180°

e Pulse rate

- 50, 360, 512, 600, 1000, 1024, 1500, 2000, 2048, 2500, 4096, 5000 (e.g. 360 pulses => 0360)
- Other pulse rates on request

optional on request
- optical fibre connection
- Ex 2/22
- special cable length

Connection technology

Connector, self-assembly

M12	05.CMB-8181-0
M23 ²⁾	8.0000.5012.0000

Cordset, pre-assembled with 2 m PVC cable

M12	05.00.6041.8211.002M
M23 ²⁾	8.0000.6201.0002

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.

1) Enclosed, not mounted

2) Suitable for connection type 4

Incremental Encoders

Heavy Duty, optical Sendix H120 (Hollow shaft) Push-Pull / RS422

Mechanical characteristics		
Speed	max. at 60°C	6000 min ⁻¹ max. 3500 min ⁻¹
Starting torque		0,05 Nm
Load capacity of shaft	radial axial	400 N 300 N
Weight		approx. 1,8 kg
Protection acc. to EN 60529		IP66 + IP67
Ex approval for hazardous areas		optional Zone 2 and 22
Working temperature range		-40°C ¹⁾ ... +100°C ²⁾
Materials	shaft housing, flange	stainless steel, bore tolerance H7 seawater resistant
Shock resistance acc. EN 60068-2-27		2000 m/s ² , 6 ms
Vibration resistance acc. EN 60068-2-6		150 m/s ² , 10...2000 Hz

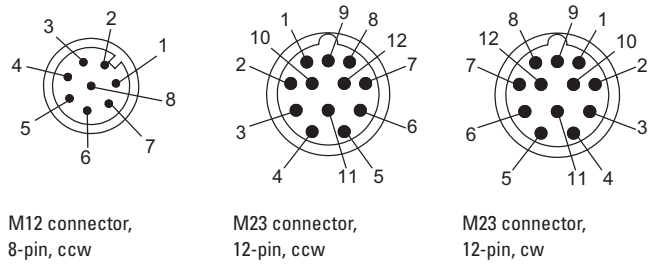
Electrical characteristics		
Output circuit:	RS422 (TTL-compatible)	Push-Pull
Power supply	5 V (±5 %) or 10 ... 30 V DC	10 ... 30 V DC
Power consumption (no load)	typ. 40 mA / max. 90 mA	typ. 80 mA / max. 150 mA
Permissible load / channel	max. ±20 mA	max. ±30 mA
Pulse frequency	max. 300 kHz	max. 300 kHz
Signal level	high min. 2,5 V low max. 0,5 V	min. U _B - 3 V max. 2,5 V
Rising edge time t_r	max. 200 ns	max. 1 µs
Falling edge time t_f	max. 200 ns	max. 1 µs
Short circuit proof outputs³⁾	yes	yes
Reverse polarity protection of the power supply	no, 10 ... 30 V: yes	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	

Terminal assignment

Output circuit	Type of connection	Cable	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
1, 4, 5	1	Signal:	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Cable colour:	WH	BN	GY PK	RD BU	GN	YE	GY	PK	BU	RD	Shield
1, 4, 5	2	M12 connector, 8-pin	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Pin:	1	2	-	-	3	4	5	6	7	8	PH ⁴⁾
1, 4, 5	4, D	M23 connector, 12-pin	0 V	+V	0 Vsens	+Vsens	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	\perp
		Pin:	10	12	11	2	5	6	8	1	3	4	PH ⁴⁾

Isolate unused outputs before initial start-up.

Top view of mating side, male contact base



Output circuit	Type of connection	Terminal connections	Incr. B	Incr. A	0 V	+V	\perp	Incr. 0	Incr. \bar{A}	Incr. \bar{B}	Incr. $\bar{0}$
1, 4, 5	K	Signal:	Incr. B	Incr. A	0 V	+V	\perp	Incr. 0	Incr. \bar{A}	Incr. \bar{B}	Incr. $\bar{0}$
		Pin:	B	A	-	+	PE	0	\bar{A}	\bar{B}	$\bar{0}$

1) With connector: -40°C, with securely installed cable: -30°C, with flexibly installed cable: -20°C
 2) Measured at the flange
 3) If supply voltage correctly applied
 4) PH = Shield is attached to connector housing

Incremental Encoders

Heavy Duty, optical

Sendix H120 (Hollow shaft)

Push-Pull / RS422

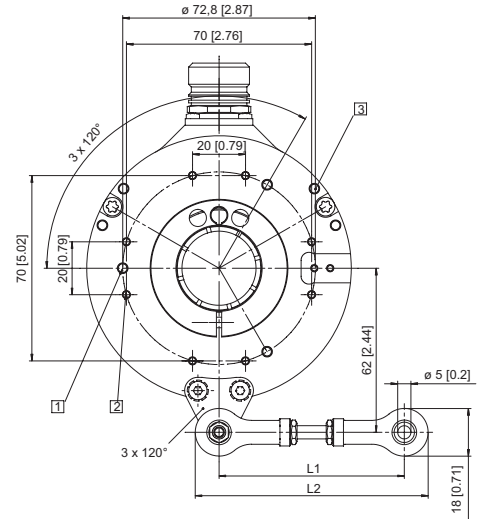
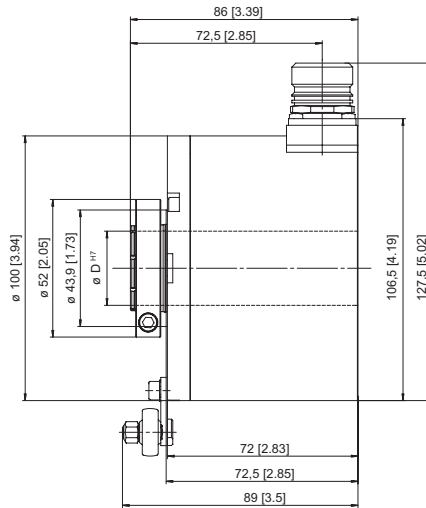
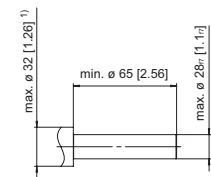
Dimensions

Through hollow shaft

- 1 3 x M4, 7 [0,28] deep
- 2 8 x M3, 8 [0,31] deep
- 3 6 x M4

L1	L2
70 [2,76]	88 [3,46]
100 [3,94]	118 [4,65]
150 [5,91]	168 [6,61]

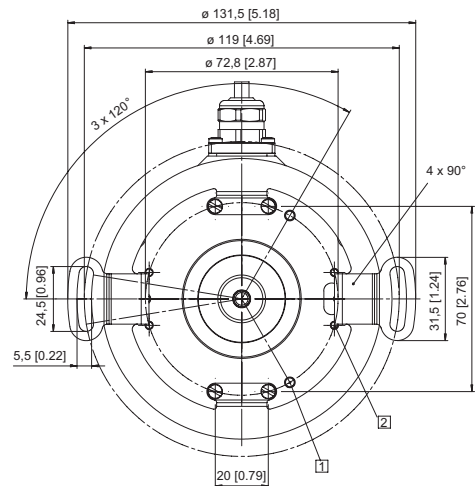
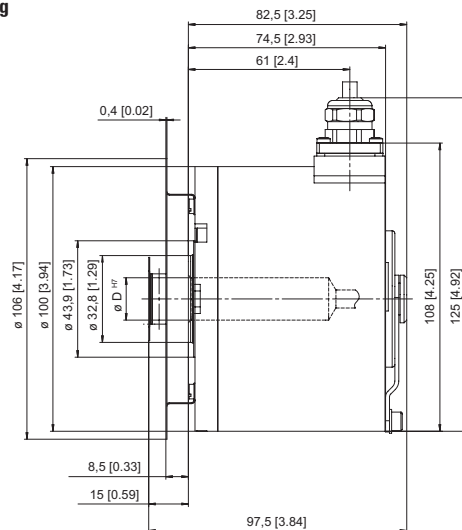
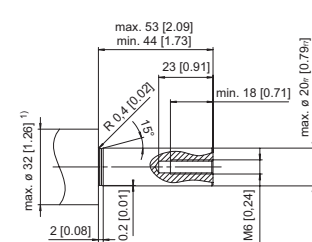
Shaft connection to the application



Blind hollow shaft with central fastening

- 1 3 x M4, 7 [0,28] deep
- 2 8 x M3, 8 [0,31] deep

Shaft connection to the application

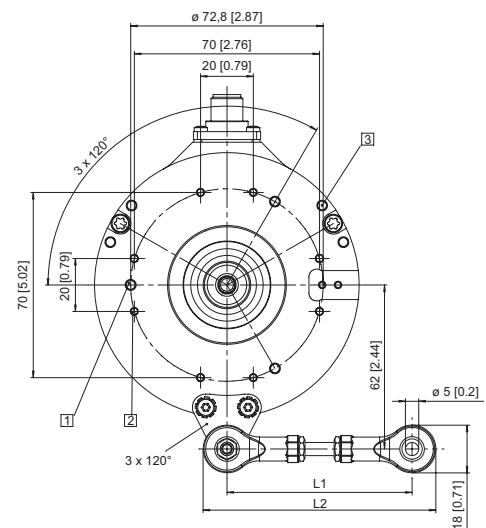
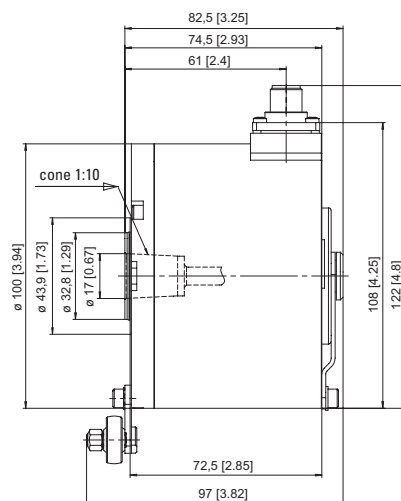
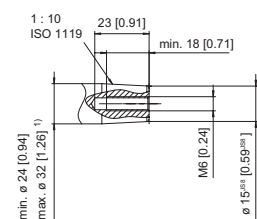


Blind hollow shaft with central fastening, cone ø 17 mm. 1 : 10

- 1 3 x M4, 7 [0,28] deep
- 2 8 x M3, 8 [0,31] deep
- 3 6 x M4

L1	L2
70 [2,76]	88 [3,46]
100 [3,94]	118 [4,65]
150 [5,91]	168 [6,61]

Shaft connection to the application



1) With a shaft diameter > 32 mm the insulation resistance of 2.5 kV cannot be guaranteed

Incremental Encoders

Heavy Duty, optical **Sendix H120 (Hollow shaft)** **Push-Pull / RS422**

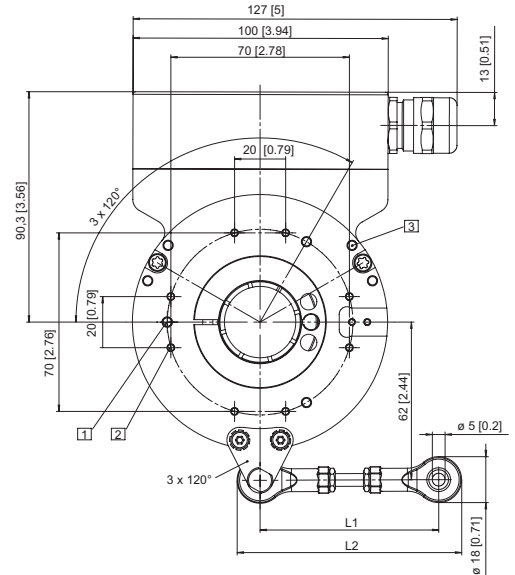
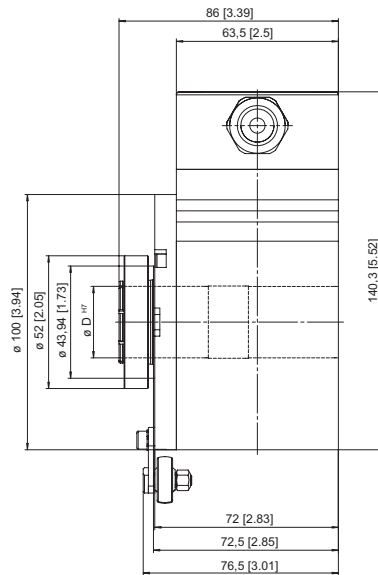
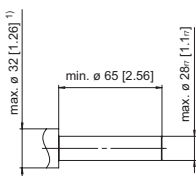
Dimensions

With terminal box (type of connection K)

- 1 3 x M4, 7 [0.28] deep
- 2 8 x M3, 8 [0.31] deep
- 3 6 x M4

L1	L2
70 [2,76]	88 [3,46]
100 [3,94]	118 [4,65]
150 [5,91]	168 [6,61]

Shaft connection to the application

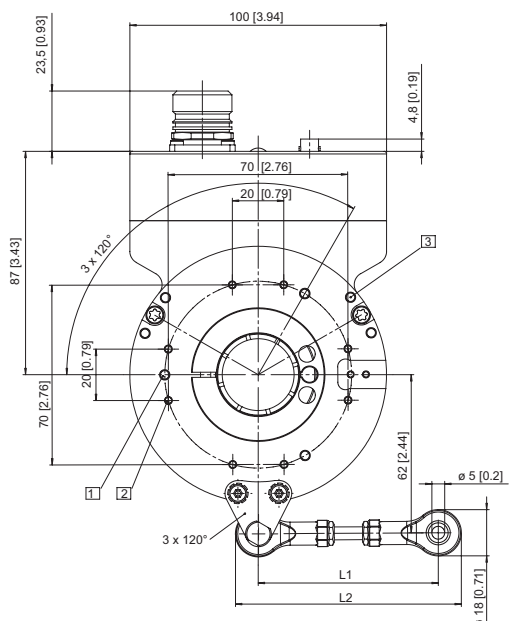
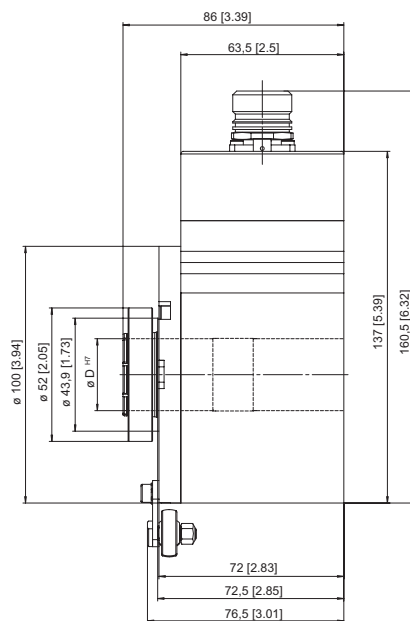
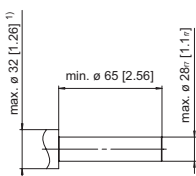


With optical fibre connection

- 1 3 x M4, 7 [0.28] deep
- 2 8 x M3, 8 [0.31] deep
- 3 6 x M4

L1	L2
70 [2,76]	88 [3,46]
100 [3,94]	118 [4,65]
150 [5,91]	168 [6,61]

Shaft connection to the application



1) With a shaft diameter > 32 mm the insulation resistance of 2.5 kV cannot be guaranteed