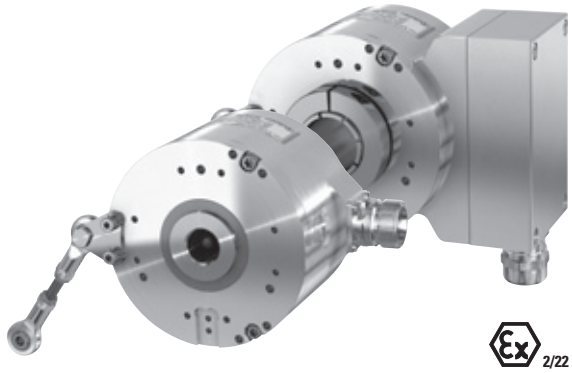
**Heavy Duty, optical** | **Sendix H120 (Hollow shaft)** | **Push-Pull / RS422**



**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.**

HD-Safety-Lock™ | 2,5 kV Bearing isolation | Dual protection of the shaft | -40°+100° Temperature | IP66/67 High protection level | Shock / vibration resistant | terminal box rotatable - 180° | Plug-in cage-clamp connectors | Hollow shaft up to Ø 28 mm | Optical sensor | Seawater-resistant

## 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 | . | X | X | X | X | . | XXXX |
|---|---|---|---|---|---|---|---|
| Type | | a | b | c | d | | e |

**a** *Flange*
2 = with fastening arm 70 mm [1]
3 = with fastening arm 100 mm[1]
4 = with fastening arm 150 mm [1]
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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## Heavy Duty, optical | Sendix H120 (Hollow shaft) | Push-Pull / RS422

### Mechanical characteristics

| | | |
|---|---|---|
| **Speed** | max.<br>at 60°C | 6000 min$^{-1}$<br>max. 3500 min$^{-1}$ |
| **Starting torque** | | 0,05 Nm |
| **Load capacity of shaft** | radial<br>axial | 400 N<br>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<br>housing, flange | stainless steel,<br>bore tolerance H7<br>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 %)<br>or 10 ... 30 V DC | 10 ... 30 V DC |
| **Power consumption**<br>(no load) | | typ. 40 mA /<br>max. 90 mA | typ. 80 mA /<br>max.150 mA |
| **Permissible load / channel** | | max. ±20 mA | max. ±30 mA |
| **Pulse frequency** | | max. 300 kHz | max. 300 kHz |
| **Signal level** | high<br>low | min. 2,5 V<br>max. 0,5 V | min. $U_B$ - 3 V<br>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 outputs** [3] | | 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

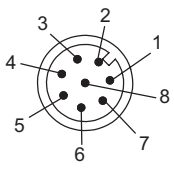
| Output circuit | Type of connection | Cable | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1, 4, 5 | 1 | Signal: | 0 V | +V | 0 Vsens | +Vsens | A | $\overline{A}$ | B | $\overline{B}$ | 0 | $\overline{0}$ | ⏚ |
| | | Cable colour: | WH | BN | GY PK | RD BU | GN | YE | GY | PK | BU | RD | Shield |

| Output circuit | Type of connection | M12 connector, 8-pin | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1, 4, 5 | 2 | Signal: | 0 V | +V | 0 Vsens | +Vsens | A | $\overline{A}$ | B | $\overline{B}$ | 0 | $\overline{0}$ | ⏚ |
| | | Pin: | 1 | 2 | – | – | 3 | 4 | 5 | 6 | 7 | 8 | PH [4] |

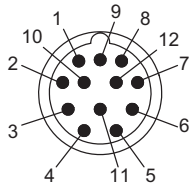
| Output circuit | Type of connection | M23 connector, 12-pin | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1, 4, 5 | 4, D | Signal: | 0 V | +V | 0 Vsens | +Vsens | A | $\overline{A}$ | B | $\overline{B}$ | 0 | $\overline{0}$ | ⏚ |
| | | Pin: | 10 | 12 | 11 | 2 | 5 | 6 | 8 | 1 | 3 | 4 | PH [4] |

**Isolate unused outputs before initial start-up.**

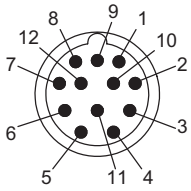
**Top view of mating side, male contact base**




M12 connector,
8-pin, ccw

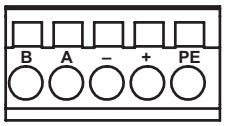


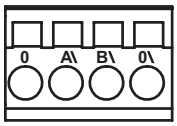

M23 connector,
12-pin, ccw




M23 connector,
12-pin, cw

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




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

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

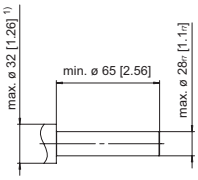
## Dimensions

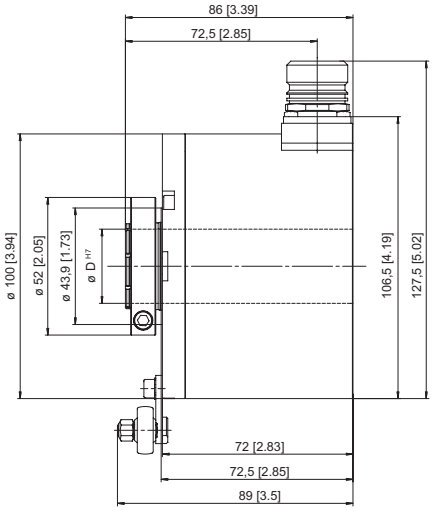
### Through hollow shaft

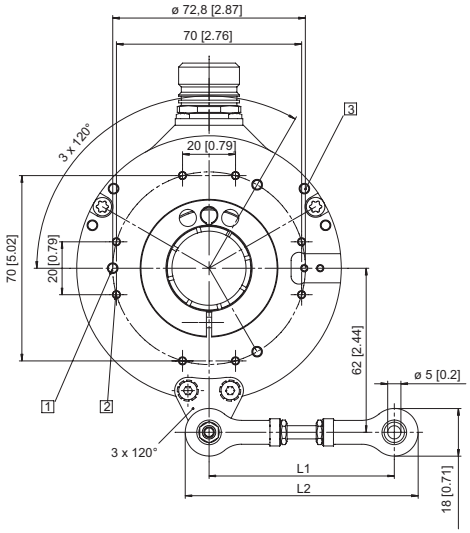
1 3 x M4, 7 [0,28] deep
2 8 x M3, 8 [0,31] deep
3 6 x M4

| 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



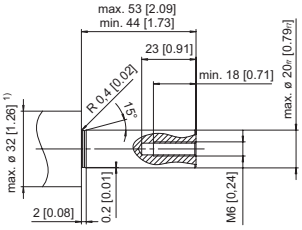



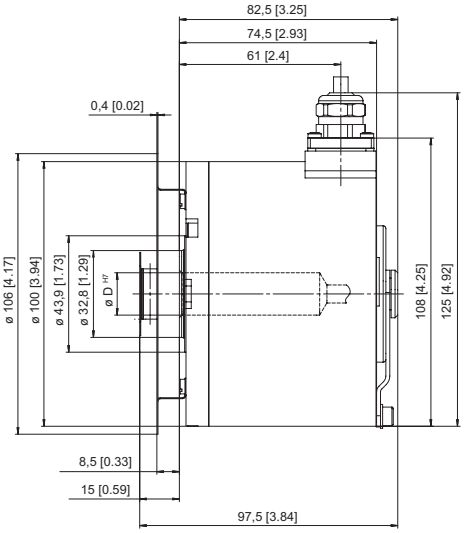



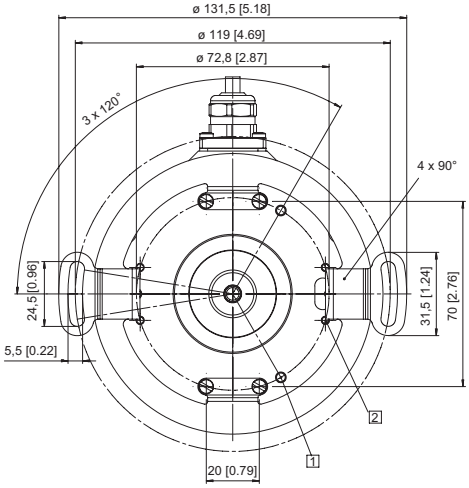

### Blind hollow shaft with central fastening

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

Shaft connection to the application



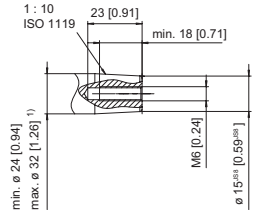



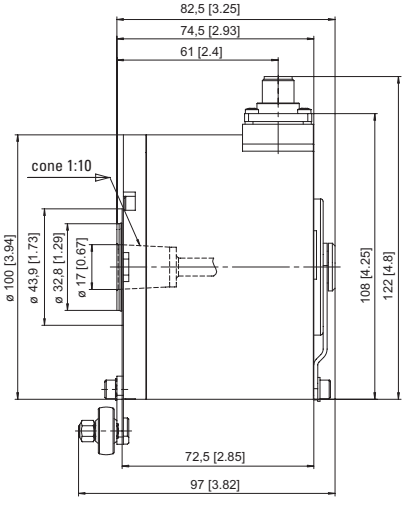

### Blind hollow shaft with central fastening, cone ø 17 mm. 1 : 10

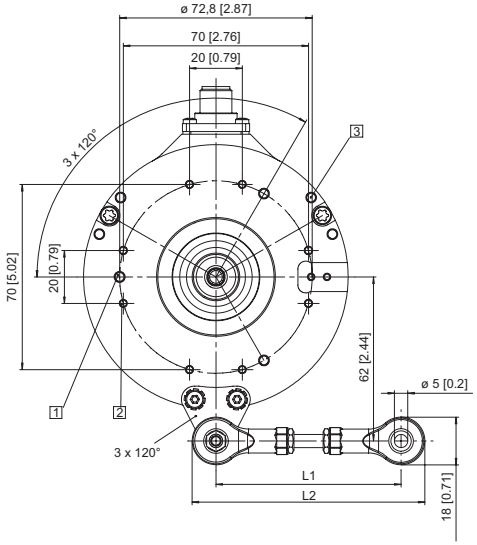
1 3 x M4, 7 [0,28] deep
2 8 x M3, 8 [0,31] deep
3 6 x M4

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

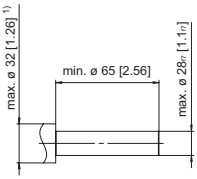
## Dimensions

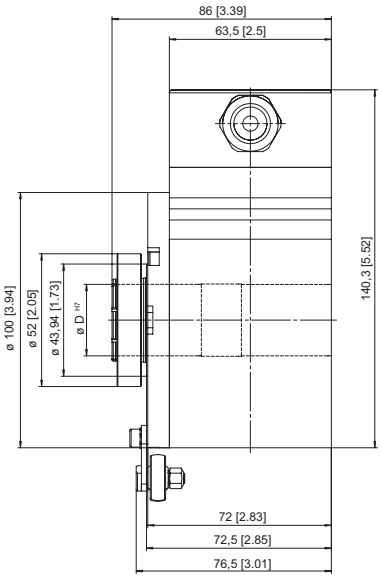
### With terminal box (type of connection K)

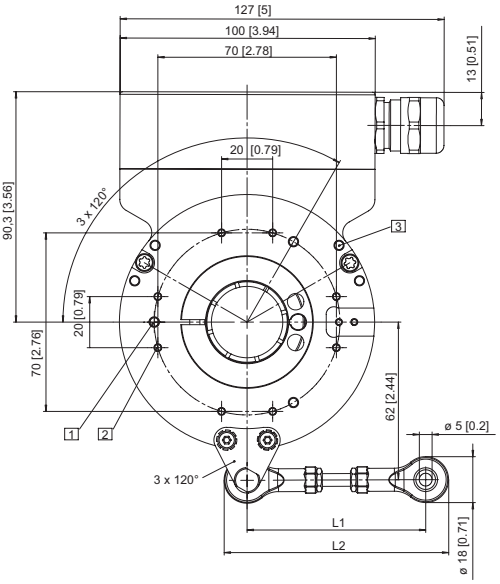
1 3 x M4, 7 [0.28] deep
2 8 x M3, 8 [0.31] deep
3 6 x M4

| 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



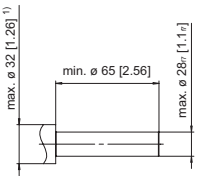



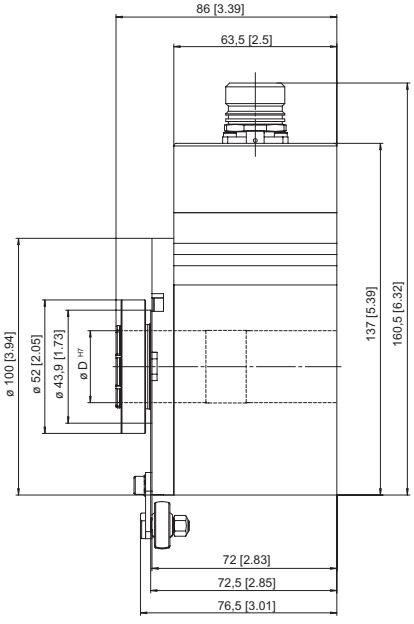

### With optical fibre connection

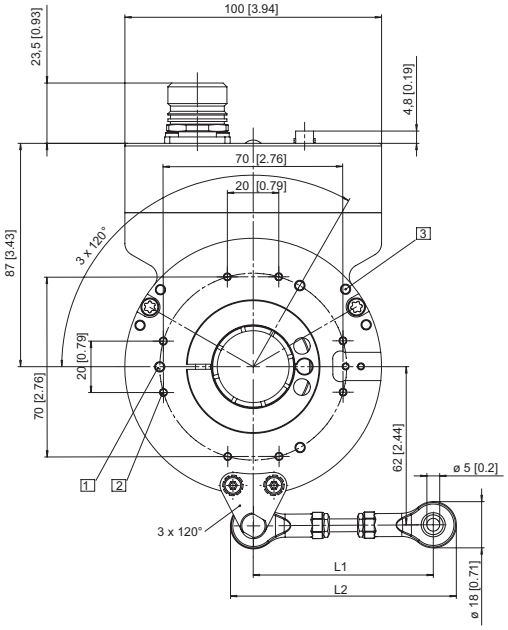
1 3 x M4, 7 [0.28] deep
2 8 x M3, 8 [0.31] deep
3 6 x M4

| 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

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