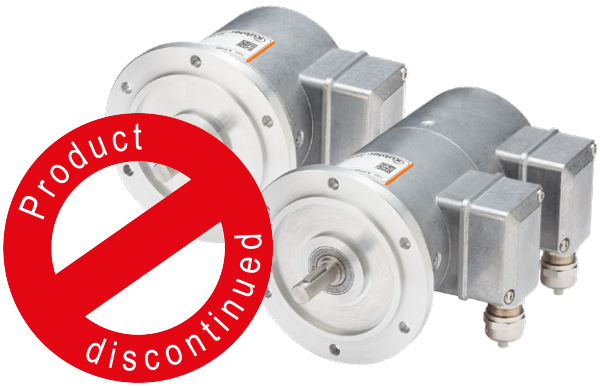
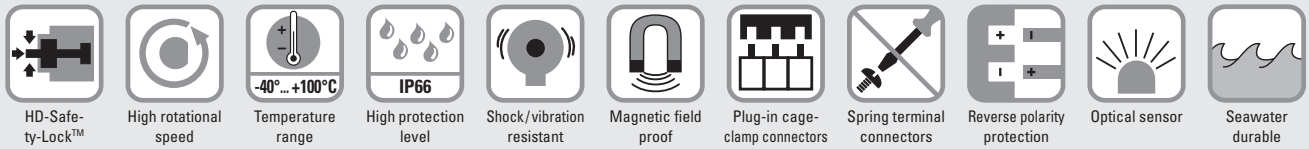
Heavy Duty shaft, optical | **Sendix Heavy Duty H100 (shaft)** | **Push-pull / RS422 / speed switch**



The Sendix Heavy Duty encoder H100 is an extremely rugged incremental encoder available in 3 versions: encoder with or without speed switch and double encoder.

Thanks to the special HD-Safety-Lock™ construction it is ideally suited for applications in heavy industry, such as steel works and cranes. Resistant materials, wide temperature ranges and a high protection level ensure it remains unaffected by the harshest environmental conditions. Its innovative connection technology enables simple quick installation.



HD-Safe-ty-Lock™ | High rotational speed | Temperature range | High protection level | Shock/vibration resistant | Magnetic field proof | Plug-in cage-clamp connectors | Spring terminal connectors | Reverse polarity protection | Optical sensor | Seawater durable

Suitable for your Heavy Duty application

- HD-Safety-Lock™ bearing construction for an extremely high bearing load capacity of up to 300 N axial and 400 N radial.
- With a temperature range from -40 °C up to +100 °C, IP66 protection and seawater durable material the encoder is resistant to harsh environmental conditions.
- Feather key shaft slot ensures positive fitting to the application.
- Safe overspeed protection by means of mechanical speed switch.

Simple quick installation

- Innovative plug-in spring terminal connectors in the terminal box greatly simplify the cable connection and offer a very high level of safety.
- Various connection possibilities thanks to terminal box being rotatable through 180°.
- Large number of resolution and switching speed options available as standard.

Order code without speed switch

8.H100	.	1	1	1	X	.	XXXX
Type		a	b	c	d		e

a *Flange*
1 = Euro RE0444

b *Shaft (ø x L), with feather key shaft slot*
1 = ø 11 x 30 mm [0.43 x 1.18"]

c *Version*
1 = incremental encoder

d *Output circuit / supply voltage*
1 = RS422 (with inverted signal) / 5 ... 30 V DC
2 = Push-pull (with inverted signal) / 10 ... 30 V DC

e *Pulse rate*
1, 5, 10, 12, 36, 100, 200, 250, 256, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2048, 2500, 3600, 4096, 5000
(e.g. 100 pulse => 0100)

Optional on request
- other pulse rates
- Ex 2/22

Order code with speed switch

8.H100	.	1	1	2	X	.	XXXX	.	XXXX	.	1
Type		a	b	c	d		e		f		g

a *Flange*
1 = Euro RE0444

b *Shaft (ø x L), with feather key shaft slot*
1 = ø 11 x 30 mm [0.43 x 1.18"]

c *Version*
2 = incremental encoder with mech. speed switch

d *Output circuit / supply voltage*
1 = RS422 (with inverted signal) / 5 ... 30 V DC
2 = Push-pull (with inverted signal) / 10 ... 30 V DC

e *Pulse rate*
1, 5, 10, 12, 36, 100, 200, 250, 256, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2048, 2500, 3600, 4096, 5000
(e.g. 100 pulse => 0100)

f *Switching speed*
750, 1000, 2000, 3000, 4000

g *Switching accuracy*
1 = standard (±4 % at 100 rad/s²)

Optional on request
- other pulse rates
- other switching speeds
- other switching accuracies
- Ex 2/22

Heavy Duty shaft, optical | Sendix Heavy Duty H100 (shaft) | Push-pull / RS422 / speed switch

Order code double encoder

8.H100	.	1	1	3	X	.	XXXX	.	XXXX
Type		a	b	c	d		e		f

a *Flange*
1 = Euro RE0444

b *Shaft (ø x L), with feather key shaft slot*
1 = ø 11 x 30 mm [0.43 x 1.18“]

c *Version*
3 = 2 x incremental encoder

d *Output circuit / supply voltage*
1 = RS422 (with inverted signal) / 5 ... 30 V DC
2 = Push-pull (with inverted signal) / 10 ... 30 V DC

e *Pulse rate encoder 1*
1, 5, 10, 12, 36, 100, 200, 250, 256, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2048, 2500, 3600, 4096, 5000
(e.g. 100 pulse => 0100)

f *Pulse rate encoder 2*
1, 5, 10, 12, 36, 100, 200, 250, 256, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2048, 2500, 3600, 4096, 5000
(e.g. 100 pulse => 0100)

Optional on request
- other pulse rates
- Ex 2/22

Mounting		Order no.
Coupling	Doppelschlaufenkupplung für Welle 12 mm mit Passfedernut 4 mm	**8.0000.1L01.1112**

Accessories – connecting cable		Order no.
For encoder	PUR-trailing cable, shielded, halogen free, orange 4 x 2 x 0.25 mm² [AWG 23] + 2 x 1 mm² [AWG 17], twisted pair	**8.0000.6400.XXXX** [1]
For speed switch	TPE-trailing cable, shielded, halogen free, black – 5 x 0.75 mm² [AWG 18]	**8.0000.6600.XXXX** [1]

Technical data

Mechanical characteristics

Maximum speed		6000 min^{-1}
Starting torque with seal – at 20 °C [68 °F]		~ 2 Ncm
Load capacity of shaft	radial axial	400 N 300 N
Weight	H100 H100 + speed switch	~ 1.8 kg [63.49 oz] ~ 2.7 kg [95.24 oz]
Protection acc. to EN 60529		IP66
Working temperature range (surface of housing)		-40 °C ... +100 °C [-40 °F ... + 212 °F]
Materials	shaft housing flange	stainless steel aluminum die-cast (EN AC-44300), seawater durable coating seawater durable aluminum type Al Si Mg Mn (EN AW-6082)
Shock resistance acc. to EN 60068-2-27		3000 m/s² (1 ms)
Vibration resistance acc. to EN 60068-2-27		
	without speed switch	100 m/s², 10 ... 2000 Hz
	with speed switch, switching speed > 1000	100 m/s², 10 ... 400 Hz
	with speed switch, switching speed < 1000	50 m/s², 10 ... 400 Hz

Electrical characteristics

		RS422 (TTL compatible)	**Push-pull** (HTL) up to 150 m [492.13‘] cable length
Output circuit			
Supply voltage		5 ... 30 V DC	10 ... 30 V DC
Power consumption (no load) with inverted signal		typ. 40 mA max. 90 mA	typ. 50 mA max. 100 mA
Permissible load per channel	DC peak	max. +/- 20 mA max. +/- 30 mA	max. +/- 30 mA max. +/- 70 mA
Pulse frequency		max. 300 kHz	max. 300 kHz
Pulse frequency with 150 m [492.13‘] cable length		max. 300 kHz	max. 80 kHz
Signal level	HIGH LOW	min. 2.5 V max. 0.5 V	min. +V - 2.5 V max. 0.5 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 [2]		yes [3]	yes
Reverse polarity protection of the supply voltage		yes	yes

Approvals

CE compliant in accordance with

EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU
ATEX Directive	2014/34/EU (for Ex 2/22 variants)

UKCA compliant in accordance with

EMC Regulations	S.I. 2016/1091
RoHS Regulations	S.I. 2012/3032
UKEX Regulations	S.I. 2016/1107 (for Ex 2/22 variants)

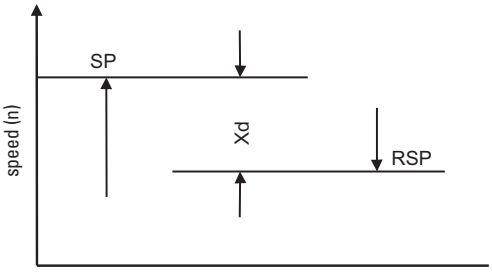
1) XXXX = cable length in meters.
2) If supply voltage +V correctly applied.
3) Only one channel allowed to be shorted-out:
At +V short circuit to channel or 0 V is permitted.

Heavy Duty shaft, optical | **Sendix Heavy Duty H100 (shaft)** | **Push-pull / RS422 / speed switch**

Speed switch	
Switching speed (ns)	750 ... 4000 min^{-1}
Max. rotational speed (mechanical)	1.25 x ns
Switching accuracy with acceleration α = 100 rad/s² (corresponds Δn = 955 min^{-1}/s)	±4 % of ns
Switching difference cw/ccw rotation	~ 3 %
Switching hysteresis (Xd)	~ 40 % up to 80 % of ns
Switching capacity	3 A / max. 50 V AC 1 A / max. 75 V DC

(more details see manual)

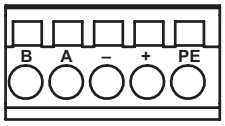
Definition switching hysteresis (Xd)



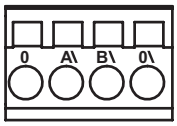
SP = switching point (for switching speed ns)
RSP = reset point
Xd = switching difference (hysteresis)

Terminal assignment terminal connections

Incremental encoders

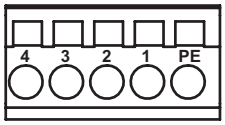


B	incremental track B
A	incremental track A
-	0 V
+	+V
PE	shield



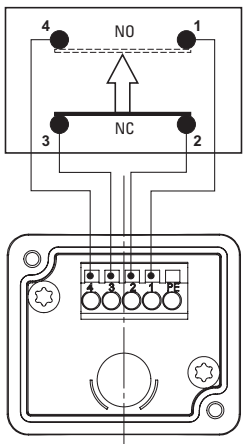
0	incremental track 0
$\overline{A}$	incremental track $\overline{A}$
$\overline{B}$	incremental track $\overline{B}$
$\overline{0}$	incremental track $\overline{0}$

Speed switch



4, 1	normally open (NO)
3, 2	normally closed (NC)
PE	shield

Jumper



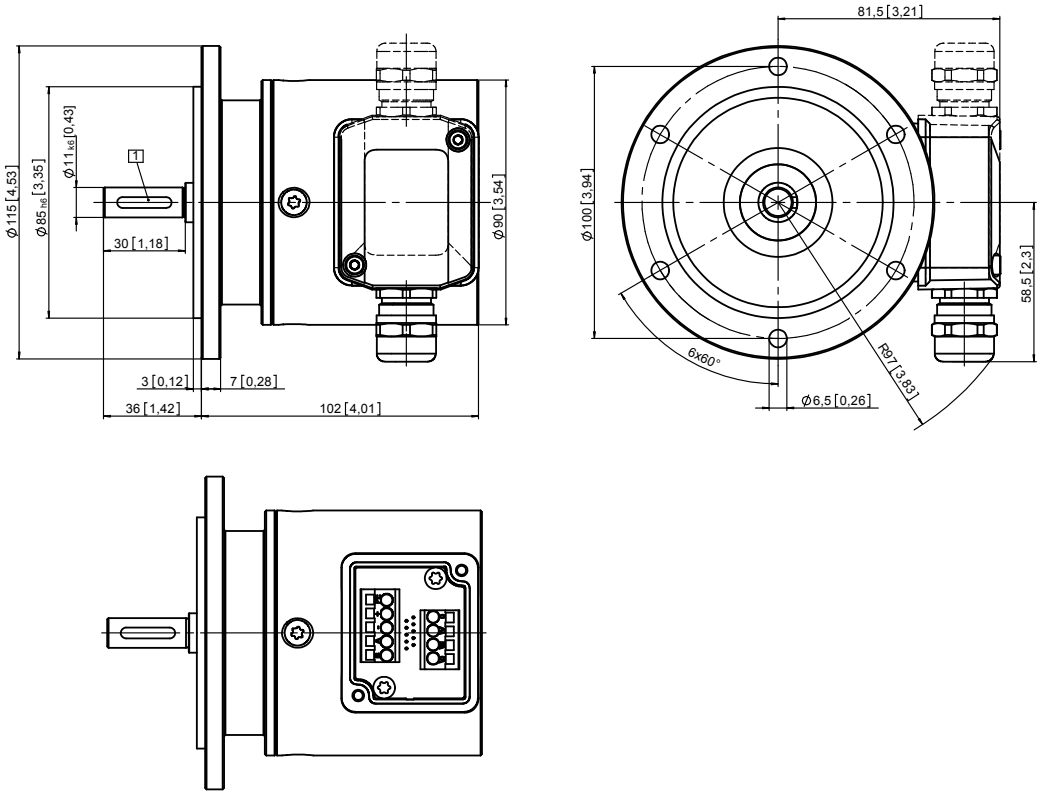
Heavy Duty shaft, optical | **Sendix Heavy Duty H100 (shaft)** | **Push-pull / RS422 / speed switch**

Dimensions

Dimensions in mm [inch]

Incremental encoder
Version 1

1 Feather key acc. to ISO 773
4 x 4 x 20 [0.16 x 0.16 x 0.79]



Heavy Duty shaft, optical	Sendix Heavy Duty H100 (shaft)	Push-pull / RS422 / speed switch

Dimensions

Dimensions in mm [inch]

Incremental encoder with mechanical speed switch or 2 x incremental encoder (double encoder)
Version 2 or 3

1 Feather key acc. to ISO 773
4 x 4 x 20 [0.16 x 0.16 x 0.79]