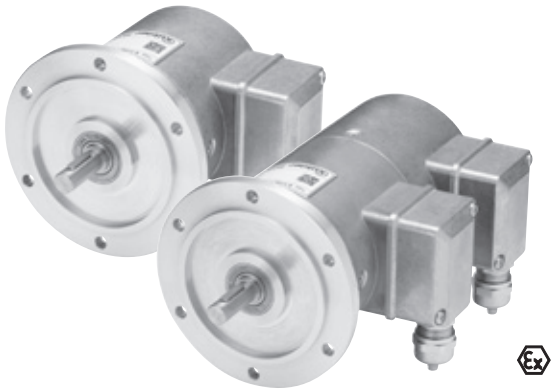
Heavy Duty, optical | Sendix H100 (Shaft) | Push-Pull / RS422 / Speed switch



The 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 Safety-Lock™ | High rotational speed | Temperature -40°+100° | High IP value IP 66 | High shaft load capacity | Magnetic field proof | Plug-in cage-clamp connectors | Spring terminal connectors | Reverse polarity protection | Optical sensor | Seawater-resistant

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-resistant 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 [1] 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

c *Version*
1 = incremental encoder

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

e *Pulse rate*
360, 512, 1000, 1024, 2048, 2500, 3600
(e.g. 360 pulses => 0360)
Other pulse rates on request

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

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

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

e *Pulse rate*
360, 512, 1000, 1024, 2048, 2500, 3600
(e.g. 360 pulses => 0360)
Other pulse rates on request

f *Switching speed*
750, 1000, 2000, 3000, 4000
Other switching speeds on request

g *Switching accuracy*
1 = Standard (± 4% at 100 rad/s²)
Other switching accuracies on request

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

c *Version*
3 = 2 x incremental encoder

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

e *Pulse rate encoder 1*
360, 512, 1000, 1024, 2048, 2500, 3600

f *Pulse rate encoder 2*
360, 512, 1000, 1024, 2048, 2500, 3600

Other pulse rates on request

1) Plug-in version from 2nd quarter 2011 - until then non plug-in spring terminal connector

Incremental Encoders

Heavy Duty, optical | Sendix H100 (Shaft) | Push-Pull / RS422 / Speed switch

Accessories

Encoder cable	PUR-trailing cable, shielded, halogen free, orange (4 x 2 x 0,25 mm² + 2 x 1 mm², twisted pair)	**8.0000.6400.XXXX** [1]
Speed switch cable	TPE-trailing cable, shielded, halogen free, black (5 x 0,75 mm²)	**8.0000.6600.XXXX** [1]

Mechanical characteristics

Speed		max. 6000 min^{-1}
Starting torque with seal		~ 2 Ncm
Load capacity of shaft	radial	400 N
	axial	300 N
Weight	H100	~ 1,8 kg
	H100 + speed switch	~ 2,7 kg
Protection acc. to EN 60 529		IP66
EX approval for hazardous areas		II 3G 3D Eex nA T4
Working temperature range (surface of housing)		-40°C … +100°C
Materials	shaft	stainless steel
	housing	die-cast aluminium (EN AC-44300), seawater-resistant coating
	flange	seawater resistant aluminium, Type Al Si Mg Mn (EN AW-6082)
Shock resistance acc. EN 60068-2-27		< 300 g ~ 3000 m/s² (1 ms)
Vibration resistance acc. EN 60068-2-27		< 10 g ~ 100 m/s²
for switching speed 750 or 1000		< 5 g ~ 50 m/s²

Speed switch

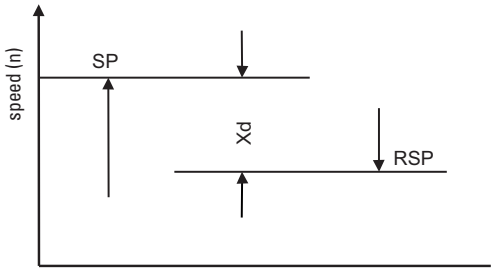
Switching speed (ns)	750 … 4000 min^{-1}
max. rotational speed (mechanical)	1,25 x ns
Switching accuracy with acceleration α = 100 rad/s² (corresponds Δn = 955 min^{-1}/s)	+/- 4% of ns
Switching difference CW/CCW rotation	~ 3 %
Switching hysteresis (Xd)	~ 40% up to 65% of ns
Switching capacity	3 A / 230 V AC 1 A / 125 V DC

(more details see manual)

Electrical characteristics

Output circuit		**RS 422** (TTL compatible)	**Push-Pull** (HTL) up to 150m cable length
Power supply		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 / channel		max. ±20 mA	max. ±30 mA
Pulse frequency		max. 300 kHz	max. 300 kHz
Signal level	high	min. 2,5 V	min. U_B - 2,5 V
	low	max. 0,5 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 connection of the supply voltage		yes	yes
CE-compliant acc. to		EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3	

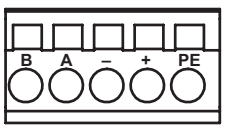
Definition Switching hysteresis (Xd)



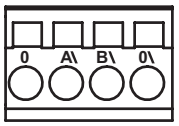
SP = Switching point (for switching speed ns)
RSP = Reset point
Xd = Switching difference (Hysteresis)

Terminal assignment terminal connections

Incremental encoders

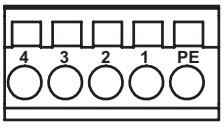


B	incremental track B
A	incremental track A
-	0 V
+	+U_B
PE	shield



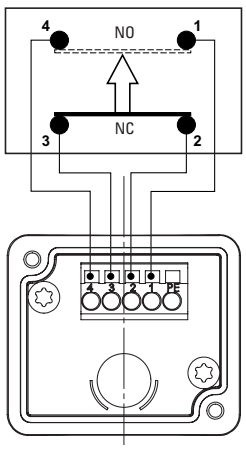
0	incremental track 0
A\	incremental track A inv.
B\	incremental track B inv.
0\	incremental track 0 inv.

Speed switch



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

Jumper

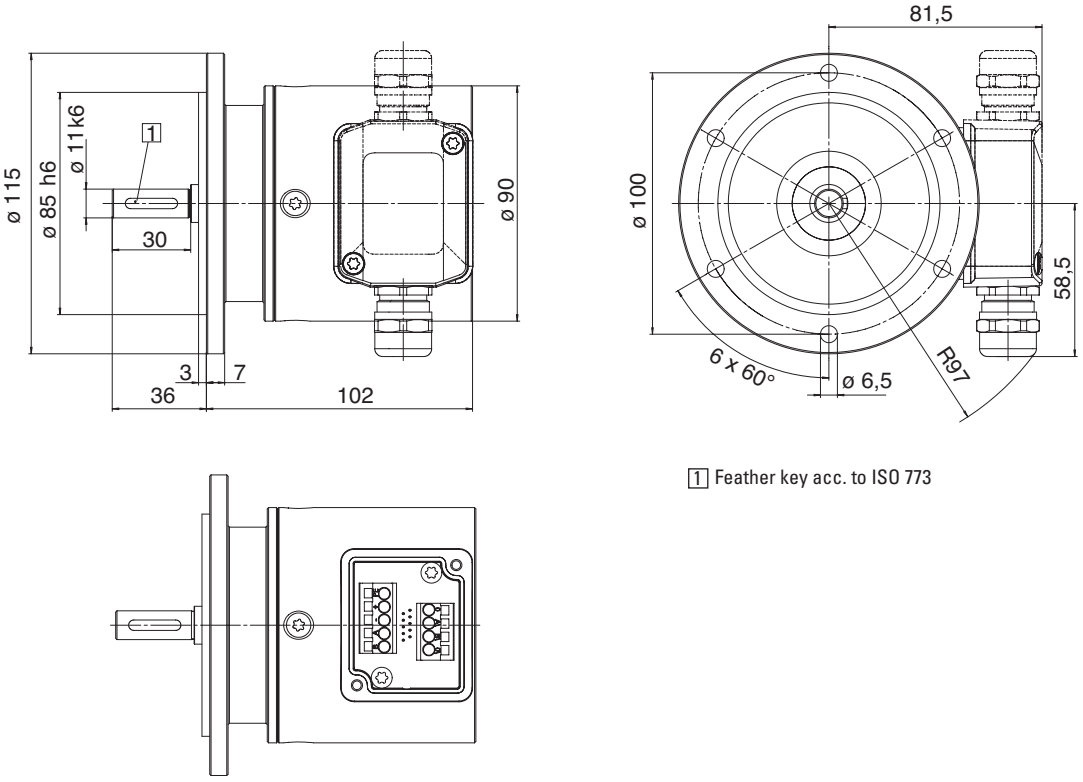


1) XXXX = cable length in meters
2) If supply voltage U_B correctly applied
3) Only one channel allowed to be shorted-out:
at U_B = 5 V short circuit to channel, 0 V, or +U_B is permitted.
at U_B = 5 ... 30 V short circuit to channel or 0 V is permitted.

Heavy Duty, optical | **Sendix H100 (Shaft)** | **Push-Pull / RS422 / Speed switch**

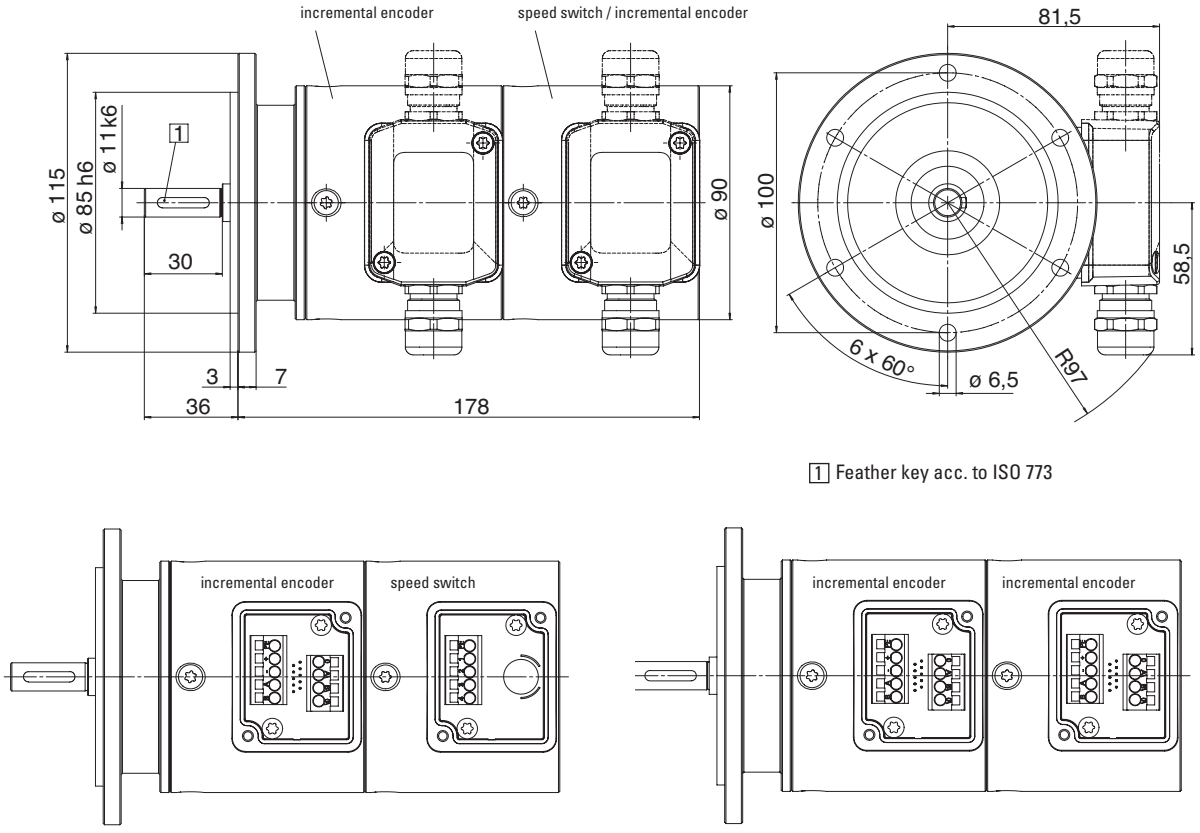
Dimensions

Incremental encoder



1 Feather key acc. to ISO 773

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



1 Feather key acc. to ISO 773