

Rotary Measuring Technology

Incremental shaft encoders



Heavy duty Type 9000 / 9000 stainless steel



- Highly flexible, chemical resistant PUR cable (stands up to constant flexing at -20 °C ... + 70 °C)
- Temperature and ageing compensation
- Large temperature range
- Short-circuit proof outputs

Type heavy duty:

- Designed for heavy duty
 - Sealed connector
- Applications: steel industry, forestry, road construction and wood industry

Type stainless steel:

- Stainless steel housing and shaft
 - Precision graduation at high resolution
- Applications: Food- and pharmaceutical industry, automatic packaging machines, bottling plants, chemical process technology

Mechanical characteristics:

Speed:	max. 6000 min ⁻¹
Rotor moment of inertia:	approx. 15 x 10 ⁻⁶ kgm ²
Starting torque:	< 0.05 Nm
Radial load capacity of shaft*:	140 N
Axial load capacity of shaft*:	70 N
Weight:	approx. 1.2 kg stainless steel: 2.8 kg

Protection acc. to EN 60 529:	IP 66
EX approval for hazardous areas:	optional zone 2 and 22
Working temperature:	-20° C ... +85 °C ¹⁾²⁾
Shaft:	stainless steel
Shock resistance acc. to DIN-IEC 68-2-27	1000 m/s ² , 6 ms
Vibration resistance acc. to DIN-IEC 68-2-6:	100 m/s ² , 10...2000 Hz

¹⁾ 80 °C with cable
²⁾ Non-condensing

Electrical characteristics:

Output circuit:	RS 422 (TTL-compatible)	Push-pull
Supply voltage:	5 V (±5 %) or 10 ... 30 V DC	10 ... 30 V DC
Power consumption (no load) without inverted signal:	-	typ. 55 mA / max. 125 mA
Power consumption (no load) with inverted signals:	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	min. U _B -2.5 V
Signal level low:	max. 0.5 V	max. 2.0 V
Rise time t _r	max. 200 ns	max. 1 µs
Fall time t _f	max. 200 ns	max. 1 µs
Short circuit proof outputs: ¹⁾	yes ²⁾	yes
Reverse connection protection at U _B :	5 V: no, 10 ... 30 V: yes	yes

Conforms to CE requirements acc. to EN 61000-6-1, EN 61000-6-4 and EN 61000-6-3
RoHS compliant acc. to EU guideline 2002/95/EG

¹⁾ If supply voltage correctly applied
²⁾ Only one channel allowed to be shorted-out:
(If UB=5 V, short-circuit to channel, 0 V, or +UB is permitted)
(If UB=5-30 V, short-circuit to channel or 0 V is permitted)

Terminal assignment

Signal:	0V	0V Sensor ²⁾	+U _B	+U _B Sensor ²⁾	A	\bar{A}	B	\bar{B}	0	$\bar{0}$	Shield
Colour:	WH 0,5 mm ²	WH	BN 0,5 mm ²	BN	GN	YE	GY	PK	BU	RD	

¹⁾ PH = Shield is attached to connector housing

²⁾ Sensor cables are connected to the supply voltage internally if long feeder cables are involved they can be used to adjust or control the voltage at the encoder

- If sensor cables are not in use, they have to be isolated or 0 V Sensor has to be connected to 0 V and U_BSensor has to be connected to U_B

- Using RS 422 outputs and long cable distances, a wave impedance has to be applied at each cable end.

Isolate unused outputs before initial startup.

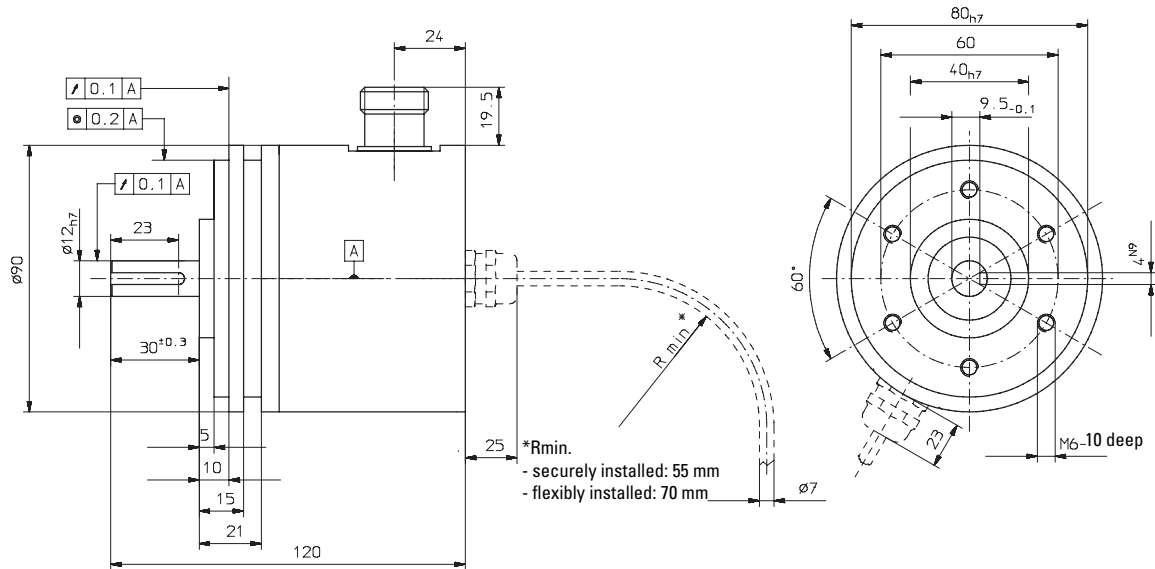
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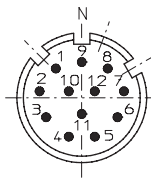
Dimensions:



Incremental Encoders

Top view of mating side, male contact base:

12 pin plug



Order code:

8.9000.11X1.XXXX.XXXX

Type		Version	0000 = Standard 5007 = Stainless steel version
Output circuit and voltage display		Pulse rate	50, 500, 1000, 1024, 2000, 2048, 2500, 3000, 4096, 5000 (e.g. 250 pulses=> 0250) Other pulse rates on request
4 = RS 422 (with inverted signal) 5 V supply voltage 5 = RS 422 (with inverted signal) 10 ... 30 V supply voltage 6 = Push-pull (with inverted signal) 10 .. 30 V supply voltage 7 = Push-pull (without inverted signal) 10 ... 30 V supply voltage		Type of connection	1 = Cable axial (1 m PUR-cable) 2* = Cable radial (1 m PUR-cable) 3* = axial 12 pin plug axial without mating connector 5* = radial 12 pin plug without mating connector

Accessories:

Cables and connectors, also pre-assembled, can be found in the chapter Connection Technology
Mounting attachments and couplings can be found in the chapter Accessories

Preferred types are indicated in bold

*not with stainless steel version

Accessories:

Corresponding mating connector to connection type of 3 or 5
Order No. 8.0000.5012.0000