Made in Germany

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Technical Information

GEL 2010

Incremental encoder

Stainless steel 1.4305

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LENORD +BAUER

Finding solutions. Founding trust.

Motion sensors and integrated drive technology

General

Incremental rotary encoders convert rotary motion into electrical signals. Lenord + Bauer rotary encoders combine the advantages of a magnetic measuring system with a robust and innovative mechanical design. They have proven themselves worldwide in a wide variety of applications, even in the harshest industrial environments. A high level of reliability together with a long service life are standard for these rotary encoders.

Properties

- High resolution up to 1024 pulses
- Reference signal
- Solid shaft 10 x 20 mm
- Stainless steel housing 1.4305
- IP 67
- High electromagnetic compatibility

Advantages

- Suitable for all standard applications and also for all real heavy-duty applications
- Withstands extreme impacts and vibration
- Resistant to dirt and oil
- Long-term stable temperature behavior
- Full function even in case of condensation: dew point resistant
- No ageing of the magnetic sensor technology
- Withstands even aggressive media

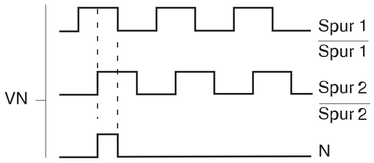
Field of application

- Food industry
- Composting facilities
- Offshore application

Output signals

Signal pattern VN

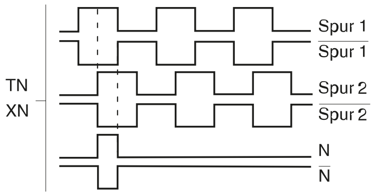
The “V” signal pattern refers to two tracks with square-wave signals offset by 90°. On the third track N a reference signal of defined length is output once per revolution.



	U_B	U_S
VN	10 ... 30 V DC	HTL

Signal pattern TN, XN

The two pulse outputs and the zero signal are also output as inverse signals.



	U_B	U_S
TN	+ 5 V DC ± 5 %	TTL
XN	10 ... 30 V DC	HTL

Legend

U_B	Operating voltage
U_S	Signal voltage
a	360° electrical
b	90° phase offset
F	Time between edges (at an output frequency of 200 kHz the time between edges is tF > 0.6 µs) Signal pattern = shown for clockwise rotation (when viewed on the encoder shaft)

Output level

The signal patterns VN and XN have HTL level, the signal patterns TN have TTL level (for output voltage, see chapter Technical Data). All outputs have a push-pull power amplifier and have sustained short circuit protection.

Technical data

Signal pattern	**TN**	**VN**	**XN**
General			
Resolution (pulses per revolution)	2, 4, 8, 16, 20, 32, 40, 50, 64, 80, 100, 128, 160, 200, 250, 256, 400, 500, 512, 800, 1000, 1024		
Measuring step deviation	< 1°		
Electrical data			
Operating voltage	5 V DC ± 5 %	10 to 30 V DC	
Power consumption	≤ 1.0 W		
Max. output frequency	≤ 200 kHz		

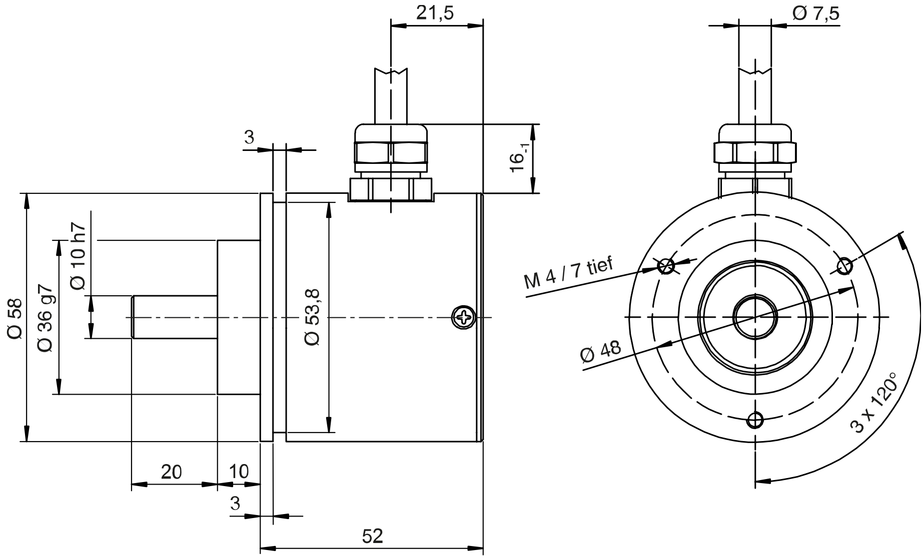
Output level high	Logic level TTL
	≥ U_B - 1.00 V
	at I = 10 mA;
	≥ U_B - 1.20 V
	at I = 30 mA;
		Logic level TTL
		≥ U_B - 1.80 V
		at I = 10 mA;
		≥ U_B - 2.20 V
		at I = 30 mA;	

Output level low	Logic level TTL
	≤ 0.75 V
	at I = 10 mA;
	≤ 1.00 V
	at I = 30 mA;
		Logic level TTL
		≤ 1.15 V
		at I = 10 mA;
		≤ 1.55 V
		at I = 30 mA;	

Mechanical data			
Weight	400 g		
Moment of inertia of rotor	14.5 x 10^{-6} kgm^2		
Max. permissible rotational speed	6,000 r.p.m. (10,000 r.p.m. short-term)		
Permissible shaft load (Point of application at the shaft end at 6,000 r.p.m.)	50 N axial, 100 N radial		
Bearing life	10^5 h		
Environmental tests			
Working temperature	-20 °C to 70 °C		
Storage temperature	-40 °C to +85 °C		
Degree of protection	IP 67		
Vibration resistance (DIN IEC 600068, Part 2-6)	200 m/s^2, 10 to 2000 Hz		
Shock resistance (DIN IEC 60068, Part 2-27)	1000 m/s^2, 11 ms		
Electromagnetic compatibility	EN 61000-6-1 to 4		
Dielectric strength	R_i > 1 MΩ, at a test voltage of 500 V AC		
Atmospheric humidity	100 %		
Condensation	permissible		
Cable			
Cable cores (number)	8		
Cable type	Halogen-free cable with extended temperature range		
Cable bending radius static	40 mm		

Dimensional drawing, connection

Dimensional drawing



Cable assignment

Signal	Cable color	Description
U_B	red	Supply voltage
GND	blue	Weight
N	pink	Reference signal
N inverse	gray	Reference signal, inverted
Track 2	yellow	Track 2
Track 2 inverse	green	Track 2, inverted
Track 1	white	Track 1
Track 1 inverse	brown	Track 2, inverted

Type code GEL 2010

Code	Description
2010	**Product type**
	Signal pattern
TN	Signal pattern TN
VN	Signal pattern VN
XN	Signal pattern XN
	Number of pulses
XXXX	Number of pulses per revolution
	Flange/Shaft
A	Clamping flange 10 x 20 mm shaft
	Electrical interface
B	1 m cable, flying lead
C	3 m cable, flying lead
D	5 m cable, flying lead
E	10 m cable, flying lead
	Position outlet
R	radial
	Option
0	No option

2010 __ ____ ______ _ _ _ **◄Product code**

A Y-number is assigned for a customer-specific version. A special version is manufactured according to drawing or application description and may deviate from the standard technical specifications.

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