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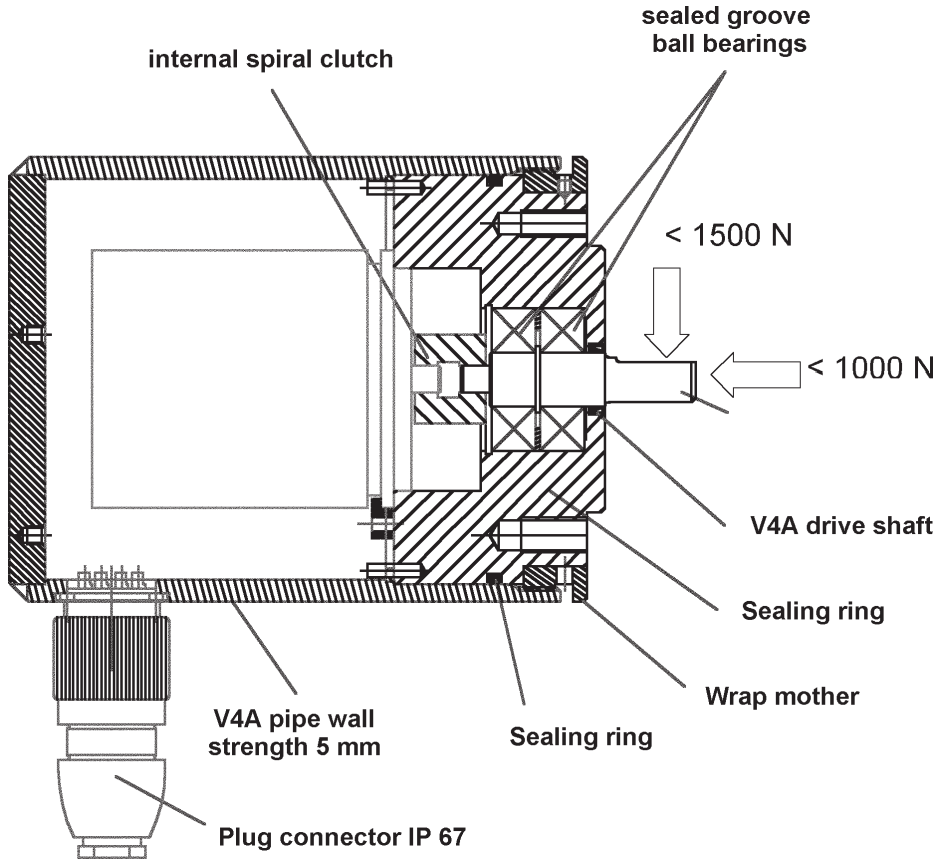
RSG 10 M - SSI

Absolute multi-turn encoder with stainless steel cover

- **schockproof up to 200g**
- **very high bearing load**
- **SSI synchronous serial interface**
- **protection class IP 67**
- **zero-setting, electronical**
- **optional with cooling or heating**

The shaft encoder systemRSG 10 was especially constructed for use under the conditions of heavy and plant making industries. The consderably lowers the costs of the mechanical adaption of the encoder, as a high efficient measuring system, to the different constructions.
System RSG 10 was developed in close cooperation with engineers of electrical maintenance and plant making departments of the heavy industries. Because of this the already known dimensions of the standard shaft encoder system have been maintained. The system stays compatible to the mostly required encoders, inspite of its very high mechanical resistivity.
Because of the extremely high mechanical and atmospheric loads all parts have been manufactured in stainlees steel (V4A 1.4571).
The high protection class of IP 67 and the very high bearings loads of 100 kg axial and 150 kg radial ease the use of this encoder under the conditions of the heavy and plant making industries. Additionally the internal encoder is separated form the shaft of the protection cover by means of a coupling, that e.g. guarantees a protection of the internal encoder shaft against shocks.
An additional protection cover is not necessary even under the conditions of heavy industries.



Weight 5 kg

Technical data

Total count	24 or 25 Bit
Steps/turn	4096 or 8192
Turns	4096
Code	Gray, Binary
Interface	SSI

Electrical data

Operating voltage	10...30 VDC
Current consumption	Max. 50 mA (w/o load), at 24 VDC
Code change frequency	800 kHz
SSI pulse frequency	62,5 kHz to 1,5 MHz
Monoflop time	20 µs
Pulse break	Min. 25 µs
Accuracy	± 0,025° with 400 kHz ± 0,05° with 800 kHz

Inputs

Control signals	CW/CCW and zero
Level High	> 0,7 UB
Level Low	< 0,3 UB
Connection:	CW/CCW input with 10 kohms to UB, zeroing input with 10 kohms to GND SSI-pulse Optocoupler inputs for electrical isolation.

Outputs

SSI data	RS 485
Diagnostic outputs	
Push-pull outputs are short-circuit-proof	
Level High	> UB - 3,5 V (with I = 20 mA)
Level Low	< 0,3 V (with I = 20 mA)

Mechanical data

Speed (mechanical)	≤ 10.000 min $^{-1}$
Drehzahl (electrical)	≤ 6.000 min $^{-1}$
Start-up torque	< 0,3 Ncm (20° C)
Shaft loading	< 1.500 N radial < 1.000 N axial
Moment of inertia	10^4 rad/s^2

Material

Housing	stainless steel V4A 1.4571.
Flange	stainless steel V4A 1.4571.
Weight	approx. 5 kg

Ambient conditions

Vibration	DIN EN 60068-2-6 ≤ 100 m/s^{-2} (16...2000 Hz)
Shock	DIN EN 600068-2-27 ≤ 2.000 m/s^2,6 ms
Operating temperature	- 20... + 85° C
Humidity	Max. relative humidity 95 % no-condensing
Protection type	IP 67
Interference resistance	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4

Description of diagnostic functions

The following is montored during operation:

- Consistency test of code
- Exceeding of the permissible signal frequency
- LED failure, aging
- Receiver failure
- Code disk, glass breakage
- Power supply of electronic gear unit

Contact description

1 UB	Encoder power supply connection.
2 GND	Encoder ground connection. - The voltage drawn to G ND is UB.
3 Pulse +	Positive SSI pulse input. Pulse + forms a current loop with pulse -. A current of approx. 7 mA in direction of Pulse + input generates a logical 1 in positive logic.
4 Data +	Positive, serial data output of the differentialline driver. A High level at the output corresponds to logical 1 in positive logic.
5 Zero	Zero setting input for setting a zero point at any desired point within the entire resolution. The zeroing process is triggered by a High pulse (pulse duration ≥ 100 ms) and must take place after the rotating direction selection (CW/CCW). For maximum interference immunity, the input must be connected to GND after zeroing.
6 Data -	Negative, serial data output of the differential line driver. A High level at the output corresponds to logical 0 in positive logic.
7 Pulse -	Negative SSI pulse input. Pulse -forms a current loop with pulse +. A current of approx. 7 mA in direction of Pulse -input generates a logical 0 in positive logic.
8 DV	Diagnosis outputs DV Jumps in data word, e.g. due to defective LED or photoreceiver, are displayed via the DV output. In addition, the power supply of the sensor unit is monitored and the DV output is set when a specified voltage level is dropped below. Both outputs are Low-active, i.e. are switched through to GND in the case of an error.
9 CW/CCW	CW/CCW determines the direction of turn. From the point of view of the shaft CW means that the code increases when the shaft turns to the right. When the GND is added, the code changes to CCW (descending sequence). The unit leaves the factory in CW.
10	Report heating on
11	Heating +
12	Heating -

Assignment RSG 10 M SSI

Signal	PIN	Cable color
UB	1	brown
GND	2	white
Takt +	3	black
Data +	4	violett
Zero adjustment	5	gray
Data -	6	yellow
Takt -	7	pink
DataValid	8	orange
CW/CCW	9	green
Report heating on	10	orange/black
Heating +	11	red 0,5
Heating -	12	blue 0,5

Instructions

CW/CCW determines the direction of turn. From the point of view of the shaft CW means that the code increases when the shaft turns to the right. When the GND is added, the code changes to CCW (descending sequence). The unit leaves the factory in CW.

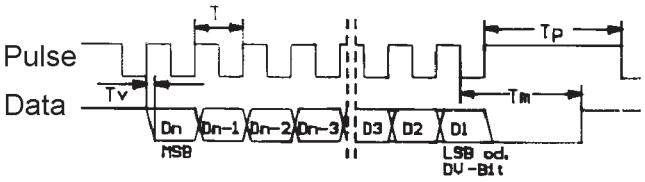
The electronic zero adjustment is by adding a steep flank of GND to UB (is activated with a descending flank). After start-up this control input should be laid externally to GND. DataValid is the diagnostic output of the sensor (high signal = sensor data plausible).

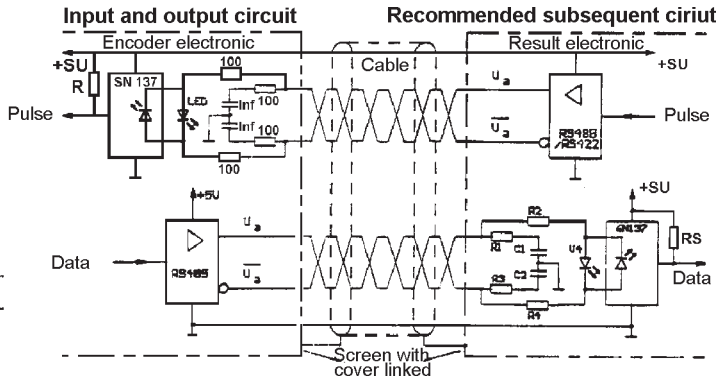
The supply voltage for the electric heating (nominal 24V, 48W) is applied to PIN 11 + 12 if available (internally not connected to UB and GND).

Please refer to the supply voltage stated on the nameplate.

Do not occupy any signals which are not required.

SSI (Synchron serielles Interface)





Type key of Encoder

Encoder type	Bit/turns	Turns	Code	Voltage	Flange	Output	Options
RSG 10 M	12 = 4096 single turn	12 = 4096 turns	G = gray	5 = 5 VDC			B = Parity-Bit SSI data
RSG 10 M	13 = 8192 single turn		B = binary	3 = 10 - 30 VDC			L = air cooling
RSG 10 M					V1 = 10 mm shaft servo flange	SG = 12pol. plug axial	W = water cooling
RSG 10 M						SS = 12pol. plug radial	H = electrical heating
RSG 10 M	_____	**12**	_____	_____	**V 1**	_____	_____

Dimensions and cutout RSG 10 M