# ReSa tron®

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**Quality - made in Germany**



PC-programmable!

# RSH 75 C

## Absolute multi-turn encoder with through hollow shaft, PC-programmable

• shockproof up to 200 g
• PC-programmable (RS 232)
• electronical adjustment
• four function outputs
• resolution up to 25 bit

## Technical data

| | |
|---|---|
| Resolution | 25 Bit |
| Steps/Turn | 8192 (programmable) |
| Turns | 4096 (programmable) |
| Code | Gray, Binary (programmable) |
| Interface | SSI (programmable) and RS 232 |
| Funktion outputs | Preselection 1 + 2, Speed monitoring, Encoder monitoring |

## Electrical data

| | |
|---|---|
| Operating voltage | UB = 10...30 VDC |
| Current consumption | Max. 50 mA (w/o load), at 24 VDC |
| Code change frequency | Max. 800 kHz |
| SSI pulse frequency | 62,5 kHz to 1,5 MHz |
| Monoflop time | 16...26 µs |
| Pulse break | Min. 50 µs |
| Accuracy | ± 0,025° with 400 kHz |
| | ± 0,05° with 800 kHz |

## Inputs

| | |
|---|---|
| Control signals | CW/CCW and Preset-in |
| Level High | > 0,7 UB |
| Level Low | < 0,3 UB |

| | |
|---|---|
| **Connection:** | UP/DOWN input with 10 kohms against UB, zeroing input with 10 kohms against GND, SSI-pulse. Optocoupler input for electrical isolation. |

## Outputs

| | |
|---|---|
| SSI data | RS 485 |
| Special outputs | |
| Level High | > UB - 3,5 V (with I = 20 mA) |
| Level Low | < 0,5 V (with I = 20 mA) |
| Loading High | ≤ - 20 mA |
| Loading Low | ≤ 20 mA |

All special outputs with short-circuit-proof push-pull output stages.

## Mechanical data RSH 75

| | |
|---|---|
| Speed (mechanical) | ≤ 6.000 min$^{-1}$ |
| Speed (electrical) | ≤ 6.000 min$^{-1}$ |
| Start-up torque | < 0,015 Nm |
| Shaft loading | < 40 N radial, < 20 N axial |
| Moment of inertia | 2 x 10$^{-6}$ kgm$^2$ |
| Weight | approx. 700 g |

## Mechanical data RSH 90

| | |
|---|---|
| Speed (mechanical) | ≤ 3.800 min$^{-1}$ |
| Speed (electrical) | ≤ 6.000 min$^{-1}$ |
| Start-up torque | < 0,015 Nm |
| Shaft loading | < 40 N radial, < 20 N axial |
| Moment of inertia | 200 x 10$^{-6}$ kgm$^2$ |
| Weight | approx. 830 g |

## Material

| | |
|---|---|
| Housing | Steel |
| Flange | Aluminium |
| Weight | < 0,7 - 1,2 kg depending on shaft diameter |

## Ambient conditions

| | |
|---|---|
| Vibration | DIN EN 60068-2-6 ≤ 100 m/s$^2$,16...2000 Hz |
| Shock | DIN EN 60068-2-27 ≤ 2.000 m/s$^2$,6 ms |
| Operating temperature | - 20... + 85° C |
| Storage temperature | - 20... + 85° C |
| Humidity | Max. relative humidity 95 % no-condensing |
| Protection type | IP 54 |
| Interference resistance | DIN EN 61000-6-2 |
| Emitted interference | DIN EN 61000-6-4 |

## Description of diagnostic functions

The following points are monitored 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

## Special functions
- Two „limit switch function" preselections
- Programmable speed monitoring
- Diagnosis and operating status

## Contact description

1 Data +  Positve, serial data output of the differential line driver. A High level at the output corresponds to logical 1 in positive logic.

2 Data -  Negative, serial data output of the differen tial line driver. A High level at the output corresponds to logical 0 in positive logic.

3  Programming enable

4 TxD  Encoder transmission output for the RS232 programming interface .

5 RxD  Encoder receiving input for the RS232 programming interface.

6 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.

7 Pulse -  Negative SSI pulse input. Pulse - forms a current loop with pulse +. A current of approx. 7mA in direction of Pulse - input generates a logical 0 in positive logic.

8, 9, 10, 11 Output 1, 2, 3, and 4  The special outputs 1, 2, 3 and 4 may be optionally assigned the special functions preselection 1, preselection 2, speed monitoring or diagnosis status by programming.

12 GND  Encoder ground connection. The voltage drawn to GND is UB.

13 Adjustment  Electronic adjustment (takeover of the pre-programmed value) can be done by generating a steep edge from GND to UB (is activated with a falling edge). Adjustment must be done after selecting the direction of rotation (CW/CCW). Set to GND for max. immunity after adjustment. Impulse length $\geq$100 ms.

14 CW/CCW  CW/CCW couting direction input. When not connected, this input is on High. CW/CCW-High means increasing output data with a clockwise shaft rotating direction when looking at the flange. CW/CCW-Low means increasing values with a counter-clockwise shaft rotating direction when looking at the flange.Delivery status is CW.

15 UB  Encoder power supply connection.

16 GND-PRG  Reference potential for programming interface. Internally not directly connected to GND.

# SSI (Synchron serielles Interface)
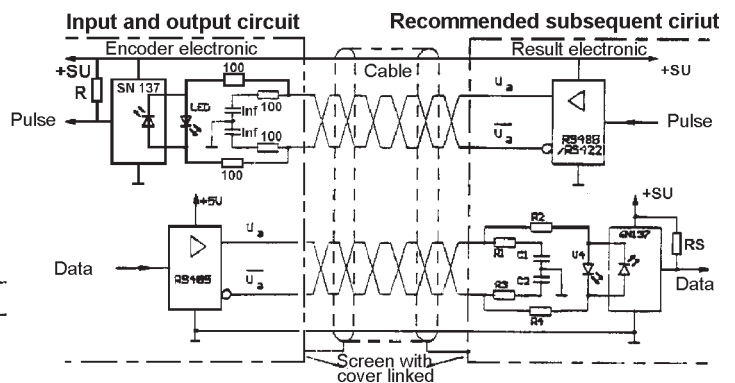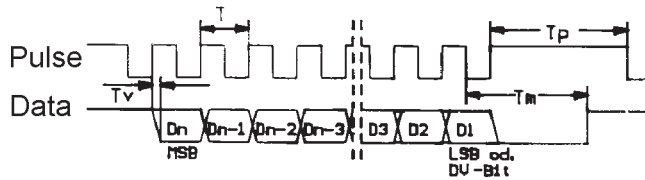
# Connection assignment RSH 75 C - SSI

| Signal | PIN | Cable colour |
|---|---|---|
| Data + | 1 | violet |
| Data - | 2 | brown/white |
| Programming enable | 3 | green/white |
| TxD (RS 232) | 4 | yellow/white |
| RxD (RS 232) | 5 | gray/white |
| Pulse + | 6 | white/pink |
| Pulse - | 7 | blue/white |
| Output 1 | 8 | red/white |
| Output 2 | 9 | black/white |
| Output 3 | 10 | brown/green |
| Output 4 | 11 | green/gray |
| GND | 12 | blue |
| Adjustment | 13 | yellow |
| CW/CCW | 14 | brown |
| UB | 15 | red |
| not occupied | 16 | pink |

**Important**

**DV** is the diagnostics output of the sensor (contact) and is allocated in the programme to an **output**. After switching on, the RSC 58 carries out a self-test. During operation, the following features are monitored: consistency of the code, overstepping of the maximum signal frequency, LED shutdown, ageing, receiver shutdown, code disk, glass breakage, and power supply to the electronic drive. If there is a malfunction, the DV changes its output level (low to high or vice versa, depending on the programming). There are three more **outputs** available and to these you can allocate two end switch functions and one speed monitor via the programme. Programming the sensor is via the RS232 (please request our programming handbook), the programming software, and the connection cable from sensor ⇔ PC (if you wish, the sensors can be pre-programmed before they leave our factory).

**To start programming,** connect to GND (go into GND). During operation, this input should be to set to UB. **CW/CCW** controls the direction of rotation. For the shaft, CW indicates a rising code for rotation to the right. In GND the code changes to CCW (falling code). The unit comes to you in the CW mode.

Electronic **adjustment** (takeover of the pre-programmed value) can be done by generating a steep edge from GND to UB (is activated with a falling edge). Adjustment must be done after selecting the direction of rotation (CW/CCW). Set to GND for max. immunity after adjustment. Impulse length ≥100 ms.

Please refer to the rating plate for the correct **power supply**.

# Type key of encoder

| Encoder type | Bit/Turn | Turns | Code | Voltage | Flange | Output |
|---|---|---|---|---|---|---|
| **RSH 75 C** | | 12 = 4096T | P = programmable | 3 = 10 - 30 VDC | 1 = Ø 14 mm, threaded pin | US = plug radial |
| **RSH 75 C** | 13 = 8192 S/T | | | | 2 = Ø 12 mm, clamping collar | KS = cable radial |
| **RSH 75 C** | | | | | 3 = Ø 14 mm, clamping collar | |
| **RSH 90 C** | | | | | bis 25,4 on request | |
| RSH____C | 13 | 12 | P | 3 | _____ | _____ |

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# Dimension and cutout  RSH 75 C - SSI

56.5
50
1
ø30
ø14H7
3H11
6
15
nose

15
75
ø4fg6
76
ca.58

3.5
6.5

17.5

90
max. ø25.4 H7
ø4 fg6

55
13.6
9.5
ø50
19
ca. 58
7.5
nose
39.5
order connector
seperately

Mounting thread M4/8 deep
for coupling spring
Mounting thread
M3/6 deep
for coupling spring
20
120°
60
33
16
Pocket for
rubber spring
element

15
12
3.5
1
ø4 H11