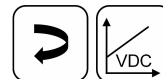


**NOVOHALL  
Rotary Sensor  
Non-contacting**

**RSC-2800  
Ratiometric  
Mobile Applications**



**Special Features**

- Non-contacting, magnetic technology
- Measuring range up to 360°
- Available with push-on coupling or marked shaft
- Simple mounting
- Protection class IP54, IP65, IP67
- Long life
- Very small hysteresis
- High resolution 12 bits
- Linearity <math>< \pm 0.5\% </math>
- Optimized for use in mobile applications with highest EMC requirements such as ISO pulses and high interferences to ISO 11452
- European E1 approved
- Other configurations see separate data sheets

**Applications**

- Mobile working machines (industrial trucks, construction machinery, agricultural and forestry machinery)

The RSC-2800 sensor utilizes a contactless magnetic measurement technology to determine the measured angle. Unlike conventional Hall sensors, the orientation of the magnetic field is measured. The position information corresponding to the angular position is transmitted via a variety of analog and digital interfaces (see separate data sheets).

The housing is made of a special high grade temperature-resistant plastic material. Elongated slots allow simplicity in mounting together with ease of mechanical adjustment.

Three shaft options are available, including a push-on coupling option that ensures fast and simple installation.

**Description**

|  |   |
|--|---|
| Material                                 | Housing: high grade, temperature resistant plastic PPS-GF40/SF50<br>Shaft: SS X8CrNiS18-9 1.4305 / AISI 303 |
| Mounting                                 | With 2 screws M4 and washers  |
| Max. fastening torque of mounting screws | max. 180 Ncm  |
| Bearing                                  | Sintered bronze bushing   |
| Electrical connection                    | Cable 4x 0.5 mm <sup>2</sup> (AWG 20), TPE, unshielded  |

**Mechanical Data**

|  |   |
|--|---|
| Dimensions                             | See dimension drawing                           |
| Mechanical travel                      | 360° continuous                                 |
| Permitted shaft load static or dynamic | 20 N (axial / radial)                           |
| Torque                                 | 0.15 Ncm (IP54), 0.5 Ncm (IP65), 1.0 Ncm (IP67) |
| Weight                                 | approx. 50 g                                    |

## Ordering Specifications

### Ordering Specifications

**Preferred types printed in bold**

- Delivery time up to 25 pcs. within 10 working days EXW
- Best low-volume pricing

**Supply voltage Ub**

2: Ub = 5 VDC

**Interface parameters**

1: 5 ... 95% ratiometric to supply voltage Ub (0.25 ... 4.75 VDC)  
2: 10 ... 90% ratiometric to supply voltage Ub (0.5 ... 4.5 VDC)

**Output characteristic**

1: Rising output characteristic cw  
2: Rising output characteristic ccw  
Other output characteristics on request

**Electrical connection**

252: Cable, 4-pole, unshielded, L = 1 m  
256: Cable, 4-pole, unshielded, L = 3 m  
Cable versions and assembled connectors on request

**R S C - 2 8 3 2 - 6 3 6 - 2 1 1 - 2 5 2**

Series

**Measuring range**

03: Angle 0° ... 30° min.  
...  
**06, 12, 18, 24, 36**  
...  
36: Angle 0° ... 360° max.  
Other angles on request

**Number of channels**

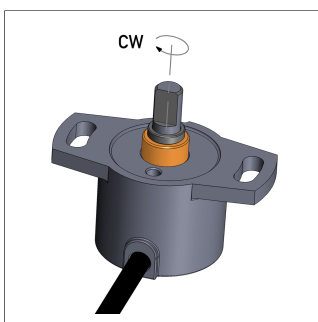
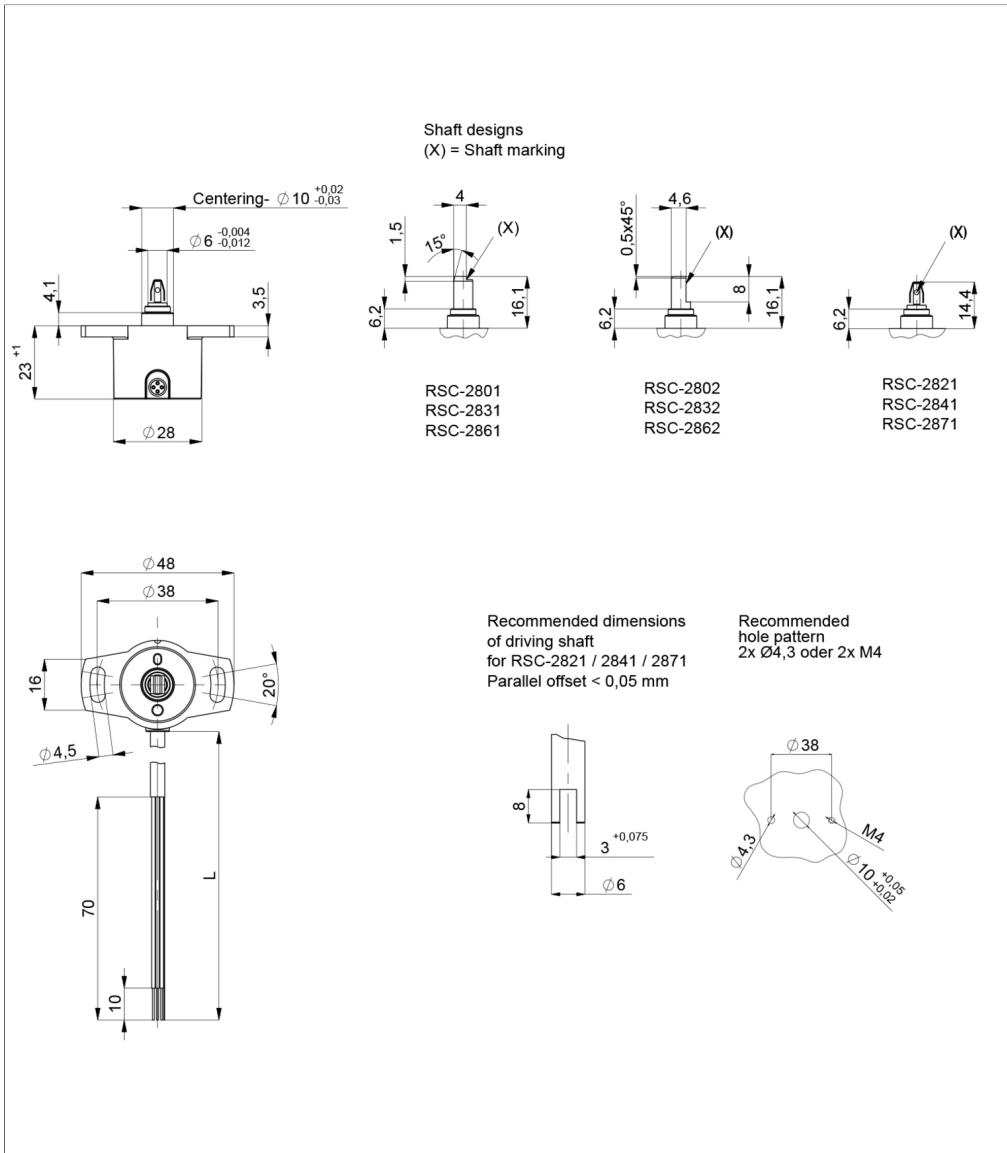
6: One-channel version (1 x supply voltage Ub / 1 x output)

**Mechanical version**

2801: 6 mm shaft with marking, IP54\*  
2831: 6 mm shaft with marking, IP65\*  
2861: 6 mm shaft with marking, IP67\*  
2802: 6 mm shaft with flattening, IP54  
**2832: 6 mm shaft with flattening, IP65**  
2862: 6 mm shaft with flattening, IP67  
2821: push-on coupling, IP54  
**2841: push-on coupling, IP65**  
2871: push-on coupling, IP67  
Other shaft configurations on request  
\* Not recommended for new designs

**Drawing**

CAD data see  
[www.novotechnik.de/en/download/cad-data/](http://www.novotechnik.de/en/download/cad-data/)



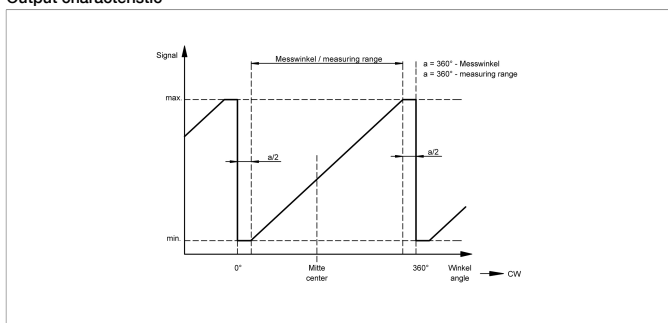
When the marking of the shaft is pointing towards the electrical outlet, the sensor output is near the electrical center position.

## Technical Data

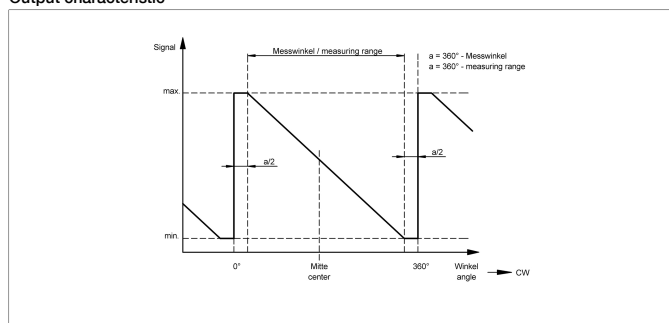
| Type                                      | RSC-28 _ _ _ _ -2_ _ _ _  |
|---|---|
| Output signal                             | ratiometric to supply voltage Ub<br>5 ... 95% (0.25 ... 4.75 V)<br>10 ... 90% (0.5 ... 4.5 V) |
| Load                                      | ≥ 1 kΩ  |
| Number of channels                        | 1   |
| Update rate                               | typ. 5 kHz  |
| Measuring range                           | 0 ... 30° up to 0 ... 360° in 10°-steps   |
| Independent linearity                     | ≤ ±0.5 %FS  |
| Resolution                                | 12 bits   |
| Repeatability                             | ≤ ±0.1°   |
| Hysteresis                                | ≤ ±0.1°   |
| Temperature error                         | Measuring range 30 ... 170°: typ. ±0.625 %FS, Measuring range > 180°: typ. ±0.31 %FS          |
| Supply voltage Ub                         | 5 VDC (4.5 ... 5.5 VDC)   |
| Current consumption w/o load              | typ. 15 mA (typ. 8 mA on request)   |
| Polarity protection                       | yes (supply lines)  |
| Short circuit protection                  | yes (vs. GND and supply voltage)  |
| Insulation resistance (500 VDC)           | ≥ 10 MΩ   |
| <b>Environmental Data</b>                 |   |
| Max. operational speed                    | 800 rpm   |
| Vibration IEC 60068-2-6                   | 20 g, 5 ... 2000 Hz, Amax = 0.75 mm   |
| Shock IEC 60068-2-27                      | 50 g, 6 ms  |
| Protection class DIN EN 60529             | IP54 / IP65 / IP67  |
| Operating temperature                     | -40 ... +85°C   |
| Life                                      | > 50 Mio. movements (mechanically)  |
| Functional safety                         | If you need assistance in using our products in safety-related systems, please contact us     |
| MTTF (IEC 60050)                          | 356 years   |
| <b>EMC Compatibility</b>                  |   |
| ISO 11452-2 Radiated HF-fields            | 30 V/m  |
| ISO 11452-5 Radiated HF-Fields, stripline | 60 V/m  |
| CISPR 25 Radiated emission                | Level acc. ECE-R10  |
| Emission/Immunity E1                      | acc. to ECE-R10   |
| <b>Connection Assignment</b>              |   |
| Signal                                    | Cable<br>code 2_ _  |
| Supply voltage Ub                         | GN  |
| GND                                       | BN  |
| Signal output                             | WH  |
| Do not connect / not assigned             | YE  |

**Technical Data  
Output  
Characteristics**

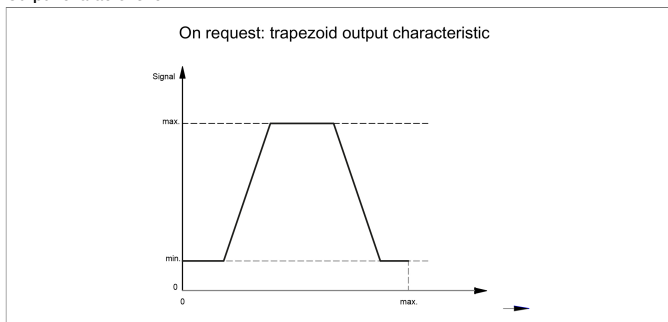
Output characteristic



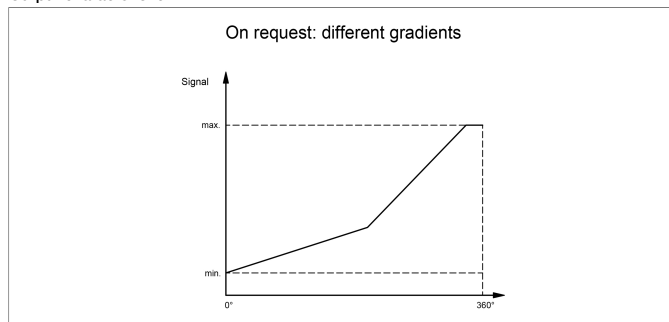
Output characteristic



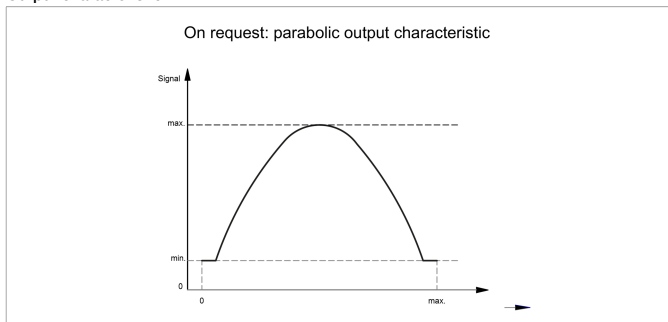
Output characteristic



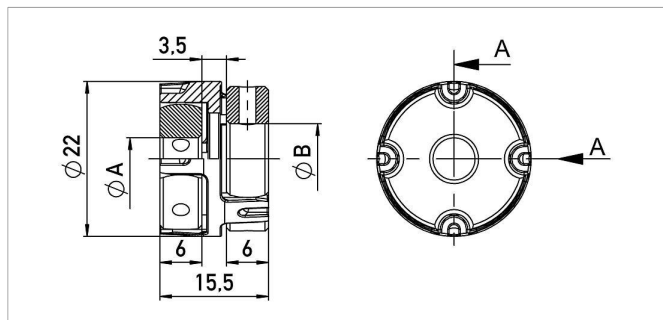
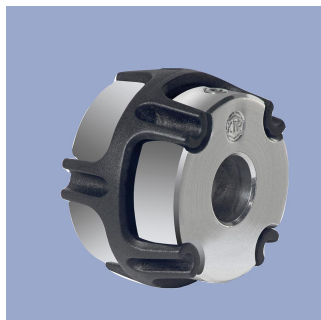
Output characteristic



Output characteristic



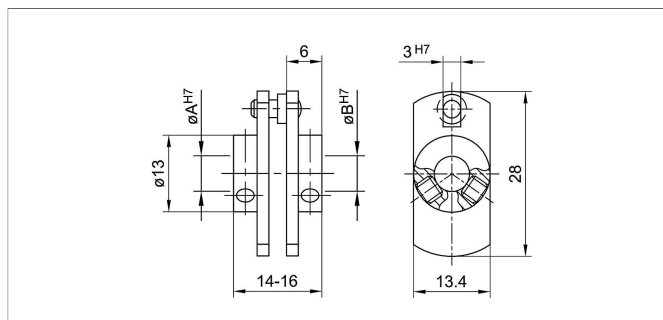
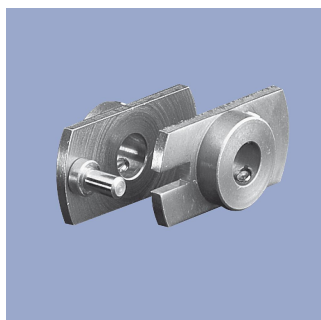
## Sensor Mounting



**Z-106-G\_**  
Backlash-free, double cardanic shaft coupling for  $\varnothing 6$  mm to  $\varnothing 6$  mm,  $\varnothing 6.35$  mm or  $\varnothing 10$  mm, mounting via 2 threaded pins with internal hexagon

Material Aluminium, PEEK  
Operating temp.  $-40 \dots +160^\circ\text{C}$   
Transferable torque  $\leq 1$  Nm  
Displacement rad.  $\leq 0.1$  mm, angl.  $\leq 0.45^\circ$

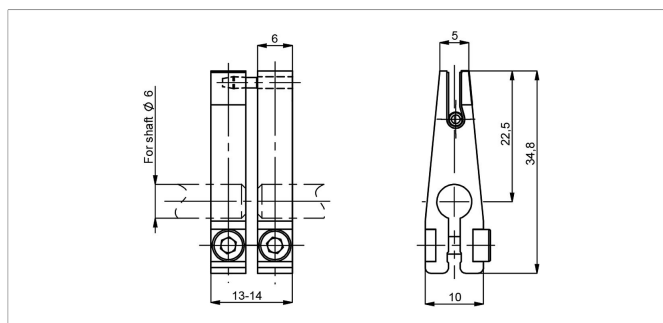
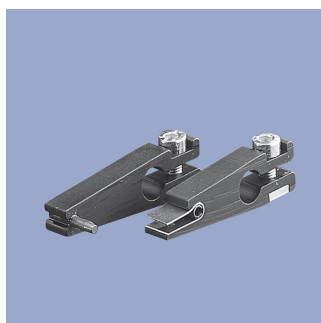
| P/N       | Type         | $\varnothing A / \varnothing B$ [mm] |
|-----------|--------------|--------------------------------------|
| 400103910 | Z-106-G-6    | 6 / 6                                |
| 400103912 | Z-106-G-6,35 | 6 / 6.35                             |
| 400103913 | Z-106-G-10   | 6 / 10                               |



**Z-104-G-6**  
Fork coupling with low backlash for  $\varnothing 6$  mm. Mounting with 2 cylinder head screws M3 with internal hexagon. Angle screwdriver DIN 911 AF 1.5 included in delivery.

Material SS, ground driving pin  
Displacement  $\leq 1$  mm

| P/N       | Type      | $\varnothing A / \varnothing B$ [mm] |
|-----------|-----------|--------------------------------------|
| 400005690 | Z-104-G-6 | 6 / 6                                |

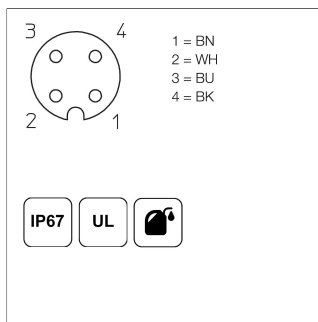
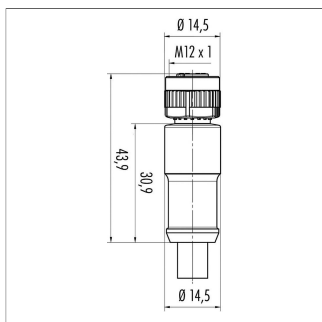


**Z-105-G-6**  
Backlash-free fork coupling for  $\varnothing 6$  mm. Mounting with 1 cylinder head screw M3 with internal hexagon. Angle screwdriver DIN 911 AF 2.5 included in delivery.

Material Aluminium, anodized (black)  
Driving pin and spring hardened  
Transferable torque  $\leq 5$  Ncm  
Displacement  $\leq 1$  mm

| P/N       | Type      |
|-----------|-----------|
| 400005691 | Z-105-G-6 |

## Connector System M12




**EEM-33-35/36/37**  
M12x1 Mating female connector, 4-pin, straight, A-coded, with molded cable, not shielded, IP67, open ended


Plug housing PA  
Cable sheath PUR, Ø = max. 6 mm, -40 ... +85°C (fixed)  
Lead wires PP, 0.34 mm<sup>2</sup>


| P/N       | Type      | Length |
|-----------|-----------|--------|
| 400056135 | EEM-33-35 | 2 m    |
| 400056136 | EEM-33-36 | 5 m    |
| 400056137 | EEM-33-37 | 10 m   |

**IP67** Protection class IP67 DIN EN 60529

**IP68** Protection class IP68 DIN EN 60529

 Very good Electromagnetic Compatibility (EMC) and shield systems

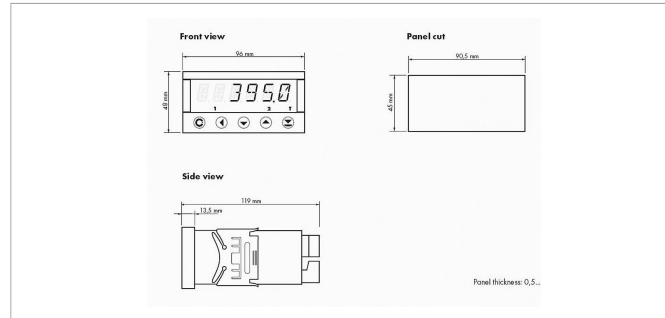
 Very good resistance to oils, coolants and lubricants

 Suited for applications in dragchains

**UL** UL - approved

 CAN-Bus

## Signal Processing



### MAP-4000

Multifunctional measuring device with digital display for direct connection of potentiometric and normalized signals.

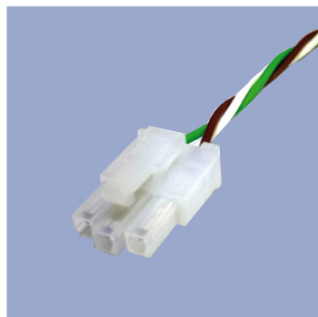
- Supply voltage 10...30 VDC, 80...250 VDC or AC
- High accuracy up to 0.1%
- Adjustable supply voltage for sensors 5...24 V
- Temperature coefficient 100 ppm/K
- Optional RS 232, RS 485, analog output, limited switch
- Complete data see separate data sheet



## Connecting Options on request



- M12 connector**
- Customized lengths
  - 3-, 4-, 6- and 8-pole versions
  - Protection class IP68
  - Ordering codes of standard versions see ordering specifications



- Molex Mini Fit jr.**
- Customized length and lead wires
  - 3-, 4- and 6-pole versions
  - On request



- Tyco AMP Super Seal**
- Pin- and bushing housing
  - Customized lengths
  - 3-, 4- and 6-pole versions
  - Protection class IP67
  - On request



- Molex Mini Fit jr.**
- Customized length and lead wires
  - 3-, 4- and 6-pole versions
  - On request



- Deutsch DTM 04**
- Pin- and bushing housing
  - Customized lengths
  - 3-, 4- and 6-pole versions
  - Protection class IP67
  - On request



- ITT Cannon Sure Seal connector**
- Customized lengths
  - 3-, 4- and 6-pole versions
  - Protection class IP67
  - On request

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