NOVOHALL
Rotary Sensor
Non-contacting
RSC-2800
SPI
Industrial

Special Features
• Non-contacting, magnetic technology
• Measuring range 360°
• Available with push-on coupling or marked shaft
• Simple mounting
• Protection class IP54, IP65, IP67
• Long life
• Very small hysteresis
• High resolution 14 bits
• Linearity < ±0.5 %
• Other configurations see separate data sheets

Applications
• Manufacturing Engineering (textile machinery, packaging machinery, sheet metal and wire machinery)
• Automation technology
• Medical engineering

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.

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
</tr>
<tr>
<td>Housing: high grade, temperature resistant plastic PPS-GF40/SF50</td>
</tr>
<tr>
<td>Shaft: SS X9CrNiS18-9 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Mounting</td>
</tr>
<tr>
<td>With 2 screws M4 and washers</td>
</tr>
<tr>
<td>Max. fastening torque of mounting screws</td>
</tr>
<tr>
<td>max. 190 Ncm</td>
</tr>
<tr>
<td>Bearing</td>
</tr>
<tr>
<td>Sintered bronze bushing</td>
</tr>
<tr>
<td>Electrical connection</td>
</tr>
<tr>
<td>Cable 5x 0.14 mm² (AWG 26), PUR, shielded</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
</tr>
<tr>
<td>See dimension drawing</td>
</tr>
<tr>
<td>Mechanical travel</td>
</tr>
<tr>
<td>360° continuous</td>
</tr>
<tr>
<td>Permitted shaft load static or dynamic</td>
</tr>
<tr>
<td>20 N (axial / radial)</td>
</tr>
<tr>
<td>Torque</td>
</tr>
<tr>
<td>0.15 Ncm (IP54), 0.5 Ncm (IP65), 1.0 Ncm (IP67)</td>
</tr>
<tr>
<td>Weight (w/o connection)</td>
</tr>
<tr>
<td>approx. 50 g</td>
</tr>
</tbody>
</table>
Ordering Specifications

Preferred types printed in bold
- Delivery time up to 25 pcs. within 10 working days EXW
- Best low-volume pricing

Supply voltage \( U_b \)
8: Serial Peripheral Interface (SPI)

Interface parameters
31: \( U_b = 5 \) VDC, Binary code, rising cw

Electrical connection
302: Cable, 5-pole, shielded, \( L = 1 \) m
Cable versions and assembled connectors on request

| R | S | C | 2 | 8 | 3 | 2 | 2 | 1 | 4 | 8 | 3 | 1 | 3 | 0 | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Resolution
214: 14 bits

Mechanical version
2102: 6 mm shaft with flattening, IP54
2132: 6 mm shaft with flattening, IP65
2162: 6 mm shaft with flattening, IP67
2121: push-on coupling, IP54
2141: push-on coupling, IP65
2171: push-on coupling, IP67
Other shaft configurations on request
When the marking of the shaft is pointing towards the electrical outlet, the sensor output is near the electrical center position.
### Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>RSC-28-8-7-4-14-8-6-8-9</th>
</tr>
</thead>
</table>

- **Protocol**: SPI
- **Level SCLK, MOSI, /SS**: TTL level (see application note SPI protocol)
- **Update rate (internal)**: 5 kHz
- **Resolution (across 360°)**: 14 bits
- **Measuring range**: 360°
- **Independent linearity**: ≤ ±0.5 %FS
- **Repeatability**: ≤ ±0.1°
- **Hysteresis**: ≤ ±0.1°
- **Temperature error**: ≤ ±0.625 %FS
- **Current consumption w/o load**: typ. 15 mA
- **Polarity protection**: yes (supply lines)
- **Supply voltage Udc**: 5 VDC (4.5 ... 5.5 VDC)
- **Max. clock rate**: 400 kHz
- **Insulation resistance (500 VDC)**: ≥ 10 MΩ

### Environmental Data

- **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)**: 316 years

### EMC Compatibility

- **EN 61000-4-2 ESD (contact/air discharge)**: 4 kV, 8 kV
- **EN 61000-4-3 Electromagnetic fields (RFI)**: 10 V/m
- **EN 61000-4-4 Fast transients (burst)**: 1 kV
- **EN 61000-4-6 Cond. disturbances (HF fields)**: 10 V eff.
- **EN 61000-4-8 Magnetic fields**: 3 A/m
- **EN 55011 Noise radiation**: Class B

### Connection Assignment

<table>
<thead>
<tr>
<th>Signal</th>
<th>Cable code 3_ _</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage Udc</td>
<td>GN</td>
</tr>
<tr>
<td>GND</td>
<td>BN</td>
</tr>
<tr>
<td>MOSI / MISO</td>
<td>YE</td>
</tr>
<tr>
<td>SCLK</td>
<td>GY</td>
</tr>
<tr>
<td>/SS (slave select)</td>
<td>WH</td>
</tr>
</tbody>
</table>

Connect cable shielding to GND.
Technical Data

Protocol

Connection
Sensor Mounting

Z-106-G-_
Backlash-free, double cardanic shaft coupling for Ø6 mm to Ø6 mm, Ø6.35 mm or Ø10 mm, mounting via 2 threaded pins with internal hexagon.

Material: Aluminium, PEEK
Operating temp.: -40 ... +160°C
Transferable torque: ≤ 1 Nm
Displacement: rad. ≤ 0.1 mm, angl. ≤ 0.45°

<table>
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<tr>
<th>P/N</th>
<th>Type</th>
<th>ØA / ØB [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>400103910</td>
<td>Z-106-G-6</td>
<td>6 / 6</td>
</tr>
<tr>
<td>400103912</td>
<td>Z-106-G-6.35</td>
<td>6 / 6.35</td>
</tr>
<tr>
<td>400103913</td>
<td>Z-106-G-10</td>
<td>6 / 10</td>
</tr>
</tbody>
</table>

Z-104-G-6
Fork coupling with low backlash for Ø6 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: ≤ 1 mm

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<th>P/N</th>
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<th>ØA / ØB [mm]</th>
</tr>
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<tbody>
<tr>
<td>400005690</td>
<td>Z-104-G-6</td>
<td>6 / 6</td>
</tr>
</tbody>
</table>

Z-105-G-6
Backlash-free fork coupling for Ø6 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)
Displacement: ≤ 1 mm

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</tr>
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<tr>
<td>400005691</td>
<td>Z-105-G-6</td>
<td></td>
</tr>
</tbody>
</table>
Connecting Options
on request

M12 connector
- Customized lengths
- 3-, 4-, 6- and 6-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
The specifications contained in our datasheets are intended solely for informational purposes. The documented specification values are based on ideal operational and environmental conditions and can vary significantly depending on the actual customer application. Using our products at or close to one or more of the specified performance ranges can lead to limitations regarding other performance parameters. It is therefore necessary that the end user verifies relevant performance parameters in the intended application. We reserve the right to change product specifications without notice.