The contactless sensor utilizes the orientation of a magnetic field for the determination of the measurement angle. The magnetic field orientation is captured with an integrated circuit. An analog output signal represents the calculated angle.

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.

The special backlash-free push-on coupling ensures extremely quick and simple installation. The transducer is not sensitive to either dirt or humidity.

Electrical connection is made via a shielded cable which is sealed into the housing. M12 connector available as an option.

**Description**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>high grade, temperature resistant plastic</td>
</tr>
<tr>
<td>Shaft</td>
<td>stainless steel</td>
</tr>
<tr>
<td>Bearings</td>
<td>bronze sleeve bearing</td>
</tr>
<tr>
<td>Electrical connections</td>
<td>shielded cable AWG 26 (0.14 mm²)</td>
</tr>
<tr>
<td>M12 connector</td>
<td></td>
</tr>
</tbody>
</table>

**Series RSC2800 analog**

**NOVOHALL**

Angle Sensor

**non-contacting**

Special features

- non-contacting, magnetic
- electrical range up to 360°
- available with push-on coupling or marked shaft
- simple mounting
- protection class IP54, IP65, IP67
- long life
- very small hysteresis
- internal resolution 12 bit
- independent linearity ±0.5 %
- single and redundant versions
- versions with digital interface see separate data sheet
When the shaft marking points to the cable outlet, the sensor is located in the electrical center position.
Type designations

<table>
<thead>
<tr>
<th>RSC ( \ldots ) ( RSC \ldots ) ( RSC \ldots )</th>
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<th>RSC ( \ldots ) ( RSC \ldots ) ( RSC \ldots )</th>
</tr>
</thead>
<tbody>
<tr>
<td>ratiometric</td>
<td>analog voltage</td>
<td>analog current</td>
</tr>
</tbody>
</table>

### Mechanical Data

- **Dimensions**: see dimension drawing
- **Mounting**: 2 screws M4 and washer
- **Starting torque of mounting screws with washer at housing flange**: 180 Ncm
- **Mechanical travel**: 360 continuous
- **Permitted shaft loading (axial and radial)**:
  - Static or dynamic force *N*
- **Torque**:
  - 1,0 (IP67), 0,5 (IP65), 0,15 (IP54) Ncm
- **Maximum operational speed**: 600 (120, if \( T > 85^\circ \)) min\(^{-1}\)
- **Weight**: ca. 50 g

### Electrical Data

- **Supply voltage \( U_b \)**: 5 (4.5 ... 6.0), 24 (18 ... 30), 24 (18 ... 30) VDC
- **Current consumption (w/o load)**: typical 15 (typ. 8 on request) per channel mA
- **Reverse voltage**: yes, supply lines
- **Short circuit protection**: yes (vs. GND and \( U_b \))
- **Measuring range**: 0 ... 360, in 10° steps
- **Number of channels**: 1 / 2
- **Update rate**: typ. 5 kHz
- **Resolution**: 12 bit
- **Repeatability**: 0.1
- **Hysteresis**: < 0.1
- **Independent linearity**: \( \pm 0.5 \% \) FS
- **Output signal**:
  - Ratiometric to \( U_b \):
    - 0.25...4.75 VDC
    - 0.5...4.5 VDC (load > 1 kΩ)
  - Analog voltage:
    - 0.1...10 VDC (load >10 kΩ)
  - Analog current:
    - 4...20 mA (burden max. 500 Ω)
- **Temperature error at measuring range 30 up to 170°**:
  - \( \pm 0.625 \% \) FS
  - \( \pm 0.94 \% \) FS
- **Temperature error at measuring range 180 up to 360°**:
  - \( \pm 0.31 \% \) FS
  - \( \pm 0.5 \% \) FS
- **Insulation resistance (500 VDC)**:
  - 10 MΩ
- **Cross-section cable**: AWG 26, 0.14 mm\(^2\)

### Environmental Data

- **Temperature range**: -40...+85 (generally -25...+85 with M12 connector) °C
- **Vibration** (IEC 60068-2-6):
  - 5...2000 Hz
  - \( A_{\text{max}} = 0.75 \) mm
  - \( a_{\text{max}} = 20 \) g
- **Shock** (IEC 60068-2-27):
  - 50 (8 ms)
  - \( > 50 \times 10^3 \) movements
- **MTTF** (DIN EN ISO 13849-1 parts count method, w/o load):
  - Single: 368
  - Per channel: 210 (partly redundant), 388 (fully redundant)
  - Life: 107 10^5 years
  - Life: 105 10^7 years
- **Protection class** (DIN EN 60529):
  - IP54 / IP65 / IP67
- **EMC compatibility**:
  - EN 61000-4-2 electrostatic discharges (ESD) 4 kV, 8 kV
  - EN 61000-4-3 electromagnetic fields 10 V/m
  - EN 61000-4-4 electrical fast transients (burst) 1 kV
  - EN 61000-4-6 conducted disturbances, induced by RF fields 10 V/m eff.
  - EN 61000-4-8 power frequency magnetic fields 3 A/m
  - EN 55011/EN 55022/A1 radiated disturbances class B
### Ordering specifications

**Preferred types printed in bold:**
- delivery time up to 25 pcs. within 10 working days
- no low volume surcharge

**Operating voltage \( U_b \)**
1. \( U_b = 24 \text{ V} (18 \ldots 30 \text{ V}) \)
2. \( U_b = 5 \text{ V} (4.5 \ldots 5.5 \text{ V}) \)

**Output signal \( U_b = 24 \text{ V} \)**
1. \( 0.1 \ldots 10 \text{ V} \)
2. \( 4 \ldots 20 \text{ mA} \)

**Output signal \( U_b = 5 \text{ V} \)**
1. \( 0.25 \ldots 4.75 \text{ V} \) ratiometric to \( U_b \)
2. \( 0.5 \ldots 4.5 \text{ V} \) ratiometric to \( U_b \)

**Output characteristics**
1. rising CW
2. rising CCW
3. crossed output channel 1 rising / channel 2 falling CW (only \( U_b = 5 \text{ V} \))

**Other characteristics on request**

**Electrical connection**
- 201: round cable 4-pol., 0.5 m shielded
- 202: round cable 4-pol., 1 m shielded
- 206: round cable 4-pol., 3 m shielded
- 210: round cable 4-pol., 5 m shielded
- 220: round cable 4-pol., 10 m shielded
- 501: connector M12 with round cable, \( L = 0.15 \text{ m} \), shielded version

Cable versions and assembled connectors on request

**Measuring range**

- 03: angle \( 0^\circ \ldots 30^\circ \) min.
- ... 06, 12, 18, 24, 36 ...
- 36: angle \( 0^\circ \ldots 360^\circ \) max.

Other angles on request

**Numbers of channels**
- 6: one-channel
- 7: redundant (two-channel) only \( U_b = 5 \text{ V} \)

**Series**

- 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, IP44
- 2832: 6 mm shaft with flattening, IP54
- 2862: 6 mm shaft with flattening, IP67
- 2821: push-on coupling, IP65
- 2841: push-on coupling, IP65
- Other shaft designs on request

### Recommended accessories

**Process-controlled indicators**
- MAP300/400/4000 with display.